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THE VARIATIONS OF PSORALEA PSORALIOIDES

Florence L. Freeman

In identifying a collection of plants from Kentucky it became apparent that *Psoralea psoralioides* of the interior of the United States is different in many respects from the plant of the Atlantic Coastal Plain. At the suggestion of Professor Fernald I have studied the species. My conclusions are here presented.

Psoralea psoralioides (Walt.) Cory, var. **typica.** Floral bracts, calyces and leaflets pubescent, conspicuously glandular-dotted: legumes and stipules glandular-dotted: bracts convex, suborbicular, abruptly caudate, 6–10 mm. long, 2–5 mm. wide, with attenuate cauda 3–5 mm. long: calyx 3–5 mm. long, averaging 3.5 mm., with triangular-ovate lobes; its ventral lobe 1.6–2.6 mm. long; dorsal lobes 1–2 mm. long: leaflets 0.6–2 mm. wide, 2–5 cm. long, about 4–5 times longer than broad.—*Trifolium psoralioides* Walt., Fl. Car. 184 (1788), type lost. *Hedysarum pedunculatum* Mill. Gard. Dict. ed 8, no. 17 (1768) in part. *Psoralea melilotoides* Michx. Fl. Bor.-Am. ii. 58 (1803). *P. Melilotus* Pers. Syn. ii. 347 (1807). *P. pedunculata* (Mill.) Vail, Bull. Torr. Bot. Cl. xxi. 114 (1894), not *P. pedunculata* Ker. Bot. Reg. t. 228 (1817), which is *P. sericea* Poir. *Orbexilum pedunculatum* (Mill.) Rydberg, N. Am. Fl. xxiv. 7 (1919). *P. psoralioides* Cory in Rhodora, xxxviii. 404 (1936).—Dry sand and clay of the Coastal Plain states, from Virginia to Georgia. The following are characteristic. Virginia: Carson, *Fernald, Long & Smart,* 1936, no. 5809; Petersburg, *Fernald, Long & Smart,* 1936, no. 5808; Waverly, *Fernald & Long,* 1936, no. 6234; Kilby, *Fernald, Long & Fogg,* 1935, no. 4890; Henrico Co., *Randolph,* 1922, no. 423; Suffolk, *A. A. Heller,* 1893, no. 959; Williamsburg, *Weatherby,* 1921, no. 3755. North Carolina: Williamston, *Wiegand & Manning,* 1927, no. 1531; Wilson, *Randolph,* 1922, no. 736. South Carolina: Society Hill, *Donnell-Smith,* 1884;

Summerville, *A. C. Hexamer & F. W. Maier*, 1888; Columbia, *K. A. Taylor*, 1890. Georgia: Valdosta, *Curtiss* 1899, no. 6473.

Although Walter's type of *Trifolium psoralioides* is said to have been lost (Vail, Bull. Torr. Bot. Cl. xxi. 114 (1894)), I assume that he had the Atlantic Coastal Plain plant with broad and glandular bracts, this plant occurring in Walter's region and his description emphasizing "bracteis cordatis cum acumine." Mr. C. A. Weatherby, who has kindly examined for me the Miller material of *Hedysarum pedunculatum*, states that it is a mixture of the preceding and the following.

Var. **eglandulosa** (Ell.), comb. nov. Habit and appearance similar to var. *typica:* floral bracts, calyx, and peduncle more pubescent, often villous, bracts and calyx especially so on margins; these, as well as legumes, stipules, and leaflets less conspicuously glandular-dotted, often without glands: bracts ovate-acuminate, seldom convex, smaller, 5–8 mm. long, 1.3–2.4 mm. wide: calyx tending to be larger, 3–6 mm. long; the lobes longer and more narrowly acute; ventral lobe 2.4–3.8 mm. long; dorsal ones 2–3 mm. long: leaflets narrower, generally 4–7 times longer than broad.—*Melilotus psoralioides* Nutt. Gen. ii. 104 (1818) in part, not *Trifolium psoralioides* Walt. *P. eglandulosa* Ell. Bot. N. C. & Ga. ii. 198 (1824).—Higher altitudes of the Southeastern States, in South Carolina and Georgia, ranging westward as far as Texas, thence northward to Ohio, Indiana, Illinois, Missouri and Kansas. North Carolina: Macon, *Harbison*, 1903. South Carolina: *Beck;* Saluda, *Weatherby*, 1932, no. 6138. Georgia: Lagrange, *S. M. Tracy*, 1905, no. 9085; Lookout Mt., *Fuller*, 1906; Gwinnett Co., *Small*, 1893; Maysville, *Buckley*, no. 1. Ohio: Bloomingville, *Mosely*, 1896. Indiana: Marengo, *Deam*, 1919, no. 27844; New Albany, *Deam*, 1913, no. 13225. Kentucky: Russelville, *Palmer*, 1920, no. 17753; New Haven, *Weatherby*, 1933, no. 6359. Tennessee: Madison Co., *S. M. Bain*, 1892, no. 56; Pikeville, *E. B. Harger*, 1934, no. 7805. Alabama: Lagrange, *Hatch;* "Lousiana br." *T. M. Peters;* Auburn, *C. F. Baker*, 1898, no. 6435. Mississippi: Kosciusco, *Weatherby*, 1933, no. 6298. Illinois: Olney, *R. Ridgway*, 1919, no. 799; Makanda, *Gleason*, 1903; Marion Co., *Bebb*. Missouri: St. Louis, *Sherff*, 1910, no. 229; Webb City, *Palmer*, 1903; Montier, *Bush*, 1894, no. 77; Sleeper, *Lansing*, 1911, no. 2908; Kimmswick, *Churchill*, 1918; Cedar Gap, *Lansing*, 1911, no 2989. Louisiana: *Hale*. Kansas: Cherokee Co., *Hitchcock*, 1896, no. 654. Oklahoma: Talihina, *Palmer*, no. 39377. Texas: Silver Lake, *J. Reverchon*, 1900, no. 1943; *Wright*.

Specimens of the extreme of this variety, *i. e.* with narrow leaflets, small deciduous bracts, large calyces and no glands, are mainly from the Mississippi Basin. Transitional forms, having some of these characters and lacking others, have been collected in the highlands

of North Carolina, South Carolina, and Georgia, as well as in the more western part of the range: Kentucky, Tennessee, Alabama, and Mississippi, also Kansas, Oklahoma, and Texas, often mingling with those of the Mississippi Basin extreme.

Nuttall, in 1818, transferred *Trifolium psoralioides* Walt. to *Melilotus*, and applied the name to a plant occurring in Carolina, Florida, also common in the open forests of Ohio, Kentucky and Tennessee, remarking that "the entire absence of glands, the minuteness of the carina, and the fruit decide this plant to be a *Melilotus*." It is evident, then, that Nuttall had two plants in his *Melilotus psoralioides*.

In 1824, Elliott, in describing *Psoralea eglandulosa* as a new species, said, "It is probably the plant described by Mr. Nuttall, but its affinity to the preceding species [*P. melilotoides* Michx.] in habit and in every character except the glands induces me to retain it in this genus." Since then Vail, in 1894, combined the species *P. eglandulosa* with *P. pedunculata* (Mill.) Vail without comment.

Var. **gracilis** (Chapm.), comb. nov. Slender, of delicate habit: leaflets small, 5–9 mm. wide, 2–4 cm. long: inflorescence slightly smaller: the glandular dots, the large abruptly caudate bracts and the small calyces as in the typical form of the species.—*Psoralea melilotoides* Michx. β *gracilis* (Chapm.) T. & G., Fl. N. Am. i. 303 (1838), based on *P. gracilis* Chapm. in T. & G., N. Am. Fl. i. 303, as synonym. *P. gracilis* Small, Fl. Se. U. S. 623 (1903). *Orbexilum gracile* (Chapm.) Rydb. N. A. Fl. xxiv. 7 (1919).—Dry sandy soil of Georgia, extending southward into Florida.—GEORGIA: Graymont, *Harper*, 1901, no. 805; Chatham Co., *Harper*, 1903, no. 1818; Altamaha R., *Thurber*. FLORIDA: *Chapman*.

Rydberg, in describing this plant as a species of *Orbexilum*, states that the stipules are longer, 5–8 mm., than those of *P. psoralioides* (*O. pedunculatum* (Mill.) Rydb.), which he says are 4–5 mm. long; he also mentions a difference in the calyx-lobes, those in *P. psoralioides* "lanceolate, slightly longer than the tube, the lowest one slightly longer than the rest"; those in var. *gracilis* (*O. gracile* (Chapm.) Rydb.) described with "upper 4 lobes triangular, shorter than the tube, the lowest lanceolate and a little longer than the tube." In the specimens which I examined at the Gray Herbarium, I found that the stipules of *P. psoralioides* and var. *gracilis* measured about the same; those of the larger plant are 4–6 mm. long, those of the smaller 3–5 mm. long. The character of the calyx-lobes holds true, but it is not

limited to the variety. Throughout our specimens of *P. psoralioides* the same trait is repeatedly found.

A slender habit, similar to that of var. *gracilis*, is found among some of the highland plants which have the larger calyx, absence of glands, small bracts, etc. of var. *eglandulosa*. This depauperate type so imperceptibly merges into the slender-leaved, more robust variety that I have made no attempt to separate it as an entity.

Radcliffe College

SOME NOTEWORTHY PLANTS OF TENNESSEE

E. B. Harger

In the fall of 1933 and again in May, 1934 I had opportunity to collect in Tennessee, and although only a few days were available for collecting, the results summarized below seem of sufficient interest to warrant publication.

Much of the time was spent near Pikeville, where the Sequatchie Valley, an eroded anticline, cuts through the Cumberland Plateau and offers the chance to collect both on the mountain sides and on the Plateau proper. Other collecting was near Erin, about 75 miles northwest from Nashville, with side trips to the banks of the Tennessee River at Camden and Pine Bluff.

In most of this region the valleys are calcareous, while the uplands show a flora indicative of more acid soils.

The only comprehensive work on the flora of this region is Gattinger's Flora of Tennessee, which was published in 1901, and, as is natural after the lapse of so much time, is incomplete in the light of later collections. This is cited below as *Gattinger*. Reference has also been made as far as possible to later reports in various publications and to specimens in the Gray Herbarium.

Specimens of all species mentioned in this paper have been deposited in the Gray Herbarium and compared there with specimens in that collection.

Panicum laxiflorum Lam., var. strictirameum (Hitchc. & Chase) Fern. Dry pasture, Clarksville, Montgomery Co., May 19, 1934. No. 7859.

Not reported from Tennessee and no specimens seen from north of Auburn, Alabama and Jackson, Mississippi.

Sphenopholis filiformis (Chapm.) Scribn. Dry, open woods on the Cumberland Plateau at about 2,000 ft. elevation, Van Buren Co., May 13, 1934. No. 7762.

Reported from Chester Co., *Gattinger*, but no specimens from Tennessee seen. All other specimens examined are from the Coastal Plain and those from the southeast have somewhat larger spikelets than those in this collection. Those from farther west match it closely and were given an unpublished varietal name by Vasey. Further study may show this to be a definite geographic trend.

Carex Leavenworthii Dewey. Along streams, head of Sequatchie Valley, Cumberland Co., May 18, 1934, no. 7823, and Erin, Houston Co., May 19, 1934, no. 7834.

"E. Tenn." *Gattinger*, and collected by H. K. Svenson in Cheatham Co.

Carex virescens Muhl. Limestone ledges near Wells Creek, Erin, Houston Co., May 22, 1934. No. 7906.

Not previously reported from Tennessee. *C. virescens* of *Gattinger* is probably *C. Swanii*.

Carex abscondita Mackenzie (*C. ptychocarpa* Steud.). Rich woods at base of mountain northwest of Pikeville, Bledsoe Co., May 16, 1934. No. 7827.

Not previously reported from Tennessee.

Carex plantaginea Lam. Steep moist hillside woods at Falls Creek Falls, Van Buren Co., May 13, 1934. No. 7749.

Reported only from the extreme eastern part of the state.

Trillium recurvatum Beck. Rich limestone woods at head of Sequatchie Valley, Cumberland Co., May 16, 1934. No. 7818.

Reported from Clarksville and Jackson and from Tipton Co. Anderson, Rhodora **36**: 126.

Urtica chamaedryoides Pursh. Rich woods on limestone at Yellow Creek, Montgomery Co., May 20, 1934. No. 7879.

All descriptions of this species call it annual, but the plants of this collection seem to be plainly from a perennial root, as in other specimens examined.

Asarum Ruthii Ashe. Dry woods at base of Walden Ridge near Pikeville, Bledsoe Co., May 14, 1934. No. 7782.

Hiawassee Valley, *Gattinger;* specimen in the Gray Herbarium from Knoxville.

Asarum Memmingeri Ashe. Dry woods near Caney Creek Falls, Van Buren Co., at about 2,000 ft. elevation, May 13, 1934. No. 7741.

Not reported from Tennessee, but some material from the state in the Gray Herbarium appears to be of this species.

DELPHINIUM VIRESCENS Nutt. Thin dry soil on limestone by roadside at Lebanon, Wilson Co., May 23, 1934. No. 7905.

What was undoubtedly this species was also seen in a similar situation near McMinnville. Probably the same as *D. carolinianum* of *Gattinger*.

SANGUINARIA CANADENSIS L., var. ROTUNDIFOLIA (Greene) Fedde. Limestone ledges, Erin, Houston Co., May 18, 1934, no. 7835, and May 22, 1934, no. 7903.

Collected in Carroll Co., by *H. K. Svenson*. Perhaps the common form in the region.

PHILADELPHUS INODORUS L., var. GRANDIFLORUS (Willd.) A. Gray. Woods on the bank of the Tennessee River at Rockport, Benton Co., May 21, 1934. No. 7892.

From the specimens seen this would seem to intergrade with the species. Knox Co., *Gattinger*.

PHILADELPHUS LATIFOLIUS Schrad. Limestone bluff of Harpeth River west of Nashville, Davidson Co., May 13, 1934. No. 7808.

PHILADELPHUS HIRSUTUS Nutt. Side of gorge at Caney Creek Falls, Van Buren Co., May 13, 1934. No. 7743.

Cocke Co., *Gattinger*.

ROBINIA ELLIOTTII (Chapm.) Ashe. Top of precipice of Sewanee conglomerate northwest of Pikeville, Bledsoe Co., about 1,800 ft. elevation, May 13, 1934. No. 7758.

ROBINIA BOYNTONII Ashe. Woods by Caney Creek Falls, Van Buren Co., about 2,000 ft. elevation, May 13, 1934. No. 7761.

BAPTISIA LEUCANTHA Torr. & Gray. Roadside near stream about 8 miles south of Camden, Benton Co., May 21, 1934. No. 7891.

Not previously reported from Tennessee.

THERMOPSIS MOLLIS M. A. Curtis. Dry woods on Cumberland Plateau west of Whitwell, Marion Co., at about 1,800 ft. elevation, May 14, 1934. No. 7788.

No published report from Tennessee seen. Of two collections in the Gray Herbarium from Lookout Mountain, one is definitely stated to have been in the state.

EUPHORBIA MERCURIALINA Michx. Along roadside in dry woods, Walden Ridge near Pikeville, Bledsoe Co., at about 1,500 ft. elevation, May 14, 1934. No. 7769.

ACER PENNSYLVANICUM L. Gorge of Falls Creek at the falls, Van Buren Co., May 13, 1934. No. 7750.

Reported only from the Great Smoky Mountains, *Gattinger*. Growing at the same station with *Carex plantaginea* and *Viola blanda* in the central part of the Cumberland Plateau.

STYRAX GRANDIFOLIA Ait. Roadside in woods south of Dover, Stewart Co., May 20, 1934. No. 7782.

Not before reported from Tennessee, but growing here only 15 miles south of the Kentucky line.

HYDROPHYLLUM MACROPHYLLUM Nutt. Rich limestone woods, Montgomery Co., May 19, 1934, No. 7876.

Sumner Co., *Gattinger*.

PHACELIA BICKNELLII Small. Limestone bluff at Erin, Houston Co., May 18, 1934. No. 7844.

Collected in Davidson Co. near Nashville by *E. J. Palmer*.

HEDEOMA HISPIDA Pursh. Dry pasture, Clarksville, Montgomery Co., May 19, 1934. No. 7856.

Not reported from Tennessee nor included in Small's Flora. Collected in Mississippi by *C. A. Weatherby*. Apparently spreading as a weed.

SCUTELLARIA OVATA Hill. Limestone talus, bank of the Tennessee River at Pine Bluff, Stewart Co., May 20, 1934. No. 7883.

SCUTELLARIA NERVOSA Pursh. Damp woods at Rockport, Benton Co., near the Tennessee River, May 21, 1934. No. 7893.

Sumner Co., *Gattinger*. Collected at Clarksville by *E. J. Palmer*.

PENSTEMON CALYCOSUS Small. Limestone ledge by roadside, Clarksville, Montgomery Co., May 19, 1934. No. 7864.

Apparently frequent in central Tennessee. A good garden perennial, producing its large, red-purple flowers in ample panicles.

PENSTEMON BREVISEPALUS Pennell. Erin, Houston Co., May 18, 1934, no. 7806, and May 22, 1934, no. 7868.

An extension of range northwestward from the stations cited by Pennell.

COREOPSIS LANCEOLATA L. Dry woods near the Tennessee River, Humphreys Co., May 21, 1934. No. 7887.

Not before reported from Tennessee.

COREOPSIS CRASSIFOLIA Ait. Dry woods near the Tennessee River, Humphreys Co., May 21, 1934. No. 7886.

Nashville, *Gattinger*. Growing with the preceding species and appearing like a form of it.

COREOPSIS AURICULATA L. Rather dry cherty bank by roadside at

base of Walden Ridge near Pikeville, Bledsoe Co., May 18, 1934. No. 7777.

Greenbrier, Robertson Co., *Gattinger*.

Serinia oppositifolia (Raf.) Kuntze. Field by Wells Creek, Erin, Houston Co., May 18, 1934. No. 7833.

No published report seen. Collected in Hardin Co. by *C. A. Weatherby* and on Lookout Mountain by *J. R. Churchill*.

Oxford, Connecticut

Najas gracillima in Indiana and Michigan—In discussing the distribution of *Najas gracillima* in a recent paper,[1] I stated that search for the species should now be made "in the area between Tioga Co., N. Y. and Wisconsin." At the time of that writing, no specimens had been seen from this central region, but recently Mr. C. C. Deam has called to my attention the collection of this *Najas* by R. M. Kriebel in Lawrence Co., Indiana. Mr. Kriebel has kindly contributed specimens for my study. This material is unquestionable *N. gracillima* with the very narrow leaves, scarious spiny-toothed auricled leaf-bases and typical slender seeds. I may cite two collections: *R. M. Kriebel*, no. 3477, in association with *Elodea canadensis*, *Bacopa rotundifolia* and *Rotala ramosior*, in a sinkhole pond 7 miles south of Bedford, Lawrence Co., Ind. and *R. M. Kriebel*, no. 1922, with *Potamogeton diversifolius* in a pond 5 miles southeast of Bedford. Part of no. 1922 was sent to the Gray Herbarium. These collections seem particularly significant, since Lawrence Co. is south of the center of Indiana and hence represents the southernmost station known for this species in the country west of Maryland.

I now can also report the definite occurrence of *N. gracillima* in Michigan. Mr. F. J. Hermann collected the species in shallow water in Third Sister Lake, three miles west of Ann Arbor, Washtenaw County, on August 19, 1936. The sheet (*Hermann*, no. 8374), which is to be deposited in the Gray Herbarium, was kindly loaned to me for study. The material is typical in all respects.

It is expected that careful search will reveal *N. gracillima* at other places between New York and Wisconsin.—Robert T. Clausen, Bailey Hortorium, New York State College of Agriculture, Ithaca, N. Y.

[1] Clausen, R. T. Studies in the genus *Najas* in the northern United States. Rhodora **38**: 333–345. pl. 437 and 438. 1936.

LOCAL PLANTS OF THE INNER COASTAL PLAIN OF SOUTHEASTERN VIRGINIA

M. L. Fernald

(*Continued from page 415*)

Zornia bracteata (Walt.) Gmel. Southampton County: "Plentiful in a dry sandy field at Franklin,"[1] 1893, *Heller*, no. 1029, "new to northern range." Isle of Wight County: forming broad carpets, border of sandy yellow pine and oak woods north of Walters, *F. G. & L.*, no. 6624. See p. 354.

Stylosanthes biflora (L.) BSP., var. hispidissima (Michx.) Pollard & Ball. Isle of Wight County: dry sandy pine and oak woods about 1 mile southeast of Zuni, *F. & L.*, no. 6241; similar habitat near Walters, *F. & L.*, no. 6242. See p. 350.

Lathyrus venosus Muhl. Sussex County: dry sandy hickory and oak woods, Burt, *F. & L.*, no. 6244.

This species, like several others with it, seen only once on the Coastal Plain.

*Lathyrus hirsutus L. Henrico County: roadside, entrance to University Heights, Westhampton, *F. L. & S.*, no. 5814.

A European species becoming established in several parts of this country.

*Galactia Macreei M. A. Curtis in Bost. Journ. Nat. Hist. i. 120 (1837). *G. pilosa*, β. *Macreei* (M. A. Curtis) Torr. & Gray, Fl. N. Am. i. 287 (1838), as β. "*Macraei.*" Princess Anne County: climbing 1–2.5 m., thickets and woods, Dam Neck, *F. & L.*, no. 3978; wet thicket near outlet of Rainey's Pond, Sand Bridge, *F. & L.*, no. 3980; both distributed as *G. volubilis* (L.) Britton. Corolla delicate pink, with purple center.

Galactia Macreei is one of three species which have been passing as *G. volubilis*. Linnaeus based his *Hedysarum volubile* L. Sp. Pl. 750 (1753) upon the plate of *H. trifolium scandens* of Dillenius, Hort. Elth. 173, t. 143, which, in absence of other material, must stand as type. The Dillenian plate at once suggests *G. mollis* Michx. (1803), as recognized by Miss Vail in Bull. Torr. Bot. Cl. xxii. 507 (1895). In the latter species, however, the dense pubescence of stem, petioles, and peduncles ascends or points upward; in *G. volubilis* and its allies it is reflexed, as in the Dillenian plate. The distinctions between *G. Macreei* and *G. volubilis* follow.

G. volubilis. Pubescence of stem, etc., loosely spreading or loosely reflexed: leaflets oval to oval-oblong, the larger 1–3 cm. broad: peduncles

[1] See Heller, l. c. 23 (1894).

and flowering rachises stiff, pilose, in the best-developed racemes 3–11 cm long, floriferous nearly to base, the true peduncles only 1 mm.–3.5 cm. long; the groups of flowers 0.5–2 cm. apart: full-grown flower-buds, just before expansion, slightly curved; the beak (sepal-tips) about 1/3 length of body: calyx spreading-pilose, 4–5.5 mm. long: the basal bracts ovate: corolla pink, essentially unicolorous; keel-petals 6–7 mm. long (in var. *mississipiensis* Vail 6–10 mm.): legumes densely spreading-pilose, 2–5.5 cm. long.—Dry thickets and borders of woods, Florida to Texas, north to Long Island, Indiana, Missouri and Kansas.

G. Macreei (isotype in Gray Herb.). Pubescence of stem, etc., minute, retrorsely strigillose: leaflets oblong, the larger 0.5–2 cm. broad: peduncles and flexuous rachises filiform, retrorsely strigillose or glabrous, in the best-developed racemes 0.7–3 dm. long, flowering only well above the base; the true peduncles 3–7 cm. long; the groups of flowers 1.5–4 cm. apart: full-grown flower-buds with longer and more falcate beak: calyx subappressed-pilose, 6–10 mm. long, its basal bracts linear- or lance-subulate: corolla pink, with deep purple center; the keel-petals 9–10 mm. long: legumes minutely strigose, 3–7 cm. long.—Damp or wet thickets, pond-margins and low woods, Florida to Texas, north on Coastal Plain to southeastern Virginia.

When Miss Vail, l. c., said "*Galactia Macreei*, the type specimen of which is preserved in Herb. Columbia College, is merely a very slender filiform-racemed variation" of *G. volubilis*, she evidently did not make close comparisons of the details. At that time she treated *G. pilosa*, var. *angustifolia* T. & G., l. c. (1838) as *G. volubilis*, var. *intermedia* Vail. l. c. 508, changing the name because of an earlier *G. angustifolia* Kunth, Mimos. t. 56 (1824). *G. pilosa*, var. *angustifolia* T. & G. and *G. volubilis*, var. *intermedia* are *G. parvifolia* A. Richard, Essai Fl. Cuba, i. 414 (1845). Should it be felt that this smaller plant of the West Indies and southern Florida, with short racemes and legumes, is only a variety of *G. Macreei* it is clear that the latter name, published in 1837, has precedence over *G. parvifolia* (1845). The varietal name, *G. pilosa*, var. *angustifolia* T. & G. (1838), in no way based upon *G. angustifolia* Kunth (1824), would be the correct one to take up.

When Torrey & Gray changed the spelling of Curtis's species, from near Wilmington, North Carolina, from the original *Macreei* to "*Macraei*", as *G. pilosa* β. *Macraei*, they presumably associated it with the Canadian W. F. Macrae, who sent plants to them, one of which was named for him as *Corallorhiza Macraei* Gray, Gray citing him as "*W. F. Macrae.*" In their preface (xiii) Torrey & Gray acknowledged the help of the Canadian "Mr. Macrae." As a matter of fact, Curtis, as indicated on his p. 84, was naming his *Galactia* for a Carolina botanist: "Several [species] are furnished by Dr. McRee, from his plantation, at Rocky Point, a few miles north of Wilming-

ton." In a note on this North Carolina botanist, Barnhart[1] completes the data: James Fergus McRee (1794–1869), born near Wilmington, M. D. (College of Physic. and Surg., N. Y.), 1814.

*Linum floridanum (Trel.) Planch. Dinwiddie County: border of dry sandy woods near Carson, *F. L. & S.*, no. 5817. Sussex County: dry argillaceous field north of Littleton, *F. & L.*, no. 6251.

For discussion see Fernald, Rhodora, xxxvii. 429, pl. 396, figs. 11–14 (1935).

*Polygala Harperi Small. Sussex County: Waverly, 1891, *A. B. Seymour*, no. 6; grassy roadside southeast of Waverly, *F. & L.*, no. 6258; dry pinelands about 4 miles northwest of Waverly, *F. & L.*, no. 6261. See p. 346.

P. ramosa Ell. Sussex County: depressions in argillaceous field north of Littleton, *F. & L.*, no. 6263. See p. 339.

Stillingia sylvatica L. Isle of Wight County: "collected in Isle of Wight County, near Franklin," 1893, *Heller*, no. 921; border of dry sandy woods near Joyner's Bridge, *F. G. & L.*, no. 6627. See p. 357.

*Aesculus discolor Pursh. Greensville County: large shrub in bottomland woods along Caney Branch, east of Emporia, *F. G. & L.*, no. 6633. See p. 352.

Cyrilla racemiflora L. Southampton County: about Franklin, 1893, *Heller*, no. 1032, "new to northern range"; Franklin, 1909, *W. W. Eggleston*, no. 4917; margin of cypress swamp by Blackwater River, near Oak Grove School, *F. & L.*, no. 6630. Several collections from Norfolk County. See p. 359.

Hibiscus militaris Cav. Seen by us only along the Nottoway River in Southampton County: Cypress Bridge, *F. & L.*, no. 6274; Courtland, *F. & L.*, no. 6834. See p. 340.

Hypericum setosum L. Prince George County: argillaceous and siliceous boggy depression southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 5844, *F. & L.*, no. 6278. Nansemond County: damp sandy and peaty woods and margin of bordering ditch, southwest of Whaleyville, *F. & L.*, no. 6836. See pp. 324, 335 and 364.

*H. denticulatum Walt., var. ovalifolium (Britton) Blake. Sussex County: sandy and peaty depression (exsiccated shallow pond) about 4 miles northwest of Homeville, *F. & L.*, no. 6837. See p. 337.

*H. dissimulatum Bickn. Prince George County: exsiccated argillaceous swale about 3 miles southeast of New Bohemia, *F. G. & L.*, no. 6638. Isle of Wight County: sandy roadside ditch south of Zuni, *F. G. & L.*, no. 6639. See p. 353.

*H. petiolatum Walt., var. tubulosum (Walt.) Fern. in Rhodora,

[1] Jour. N. Y. Bot. Gard. xxi. 167 (1920).

xxxviii. 436 (1936). *Triadenum longifolium* Small. Southampton County: sandy wooded bottomland of Nottoway River, Courtland, *F. & L.*, no. 6646. See p. 358.

Lechea.

Pending the publication in the next volume of Rhodora of Dr. Hodgdon's monograph of *Lechea*, the Virginia records are withheld.

*Viola affinis Le Conte, var. chalchosperma (Brainerd) Griscom. Southampton County: siliceous and argillaceous alluvium bordering cypress swamp, bottomland of Nottoway River, above Cypress Bridge, *F. & L.*, no. 6289. See p. 341.

*Viola lanceolata L., var. vittata (Greene) Weath. & Grisc. Sussex County: sandy and peaty depression (exsiccated shallow pond), about 4 miles northwest of Homeville, *F. & L.*, no. 6290. See p. 337.

*Lythrum lanceolatum Ell. Sussex County: wet sandy thicket, Burt, *F. & L.*, no. 6295. See p. 342.

Rhexia ventricosa Fern. & Grisc. Prince George County: fallow argillaceous field east of Prince George, *F. L. & S.*, no. 5855. Chesterfield County: exsiccated argillaceous swale west of Petersburg Turnpike, north of Swift Creek, *F. & L.*, no. 6301. See p. 344.

R. mariana L., var. purpurea Michx. Prince George County: sphagnous boggy swale southeast of Petersburg, at head of Poo Run, *F. & L.*, no. 6300.

Extension from Southampton and Norfolk Counties.

R. ciliosa Michx. Prince George County: dryish upper border of sphagnous boggy swale, about 3 miles southeast of Petersburg, at head of Poo Run, *F. & L.*, nos. 6296 and 6626. Isle of Wight County: sphagnous depression in sandy pine woods south of Zuni, *F. & L.*, no. 6625. Nansemond County: damp sandy and peaty woods and margin of bordering ditch, southwest of Whaleyville, *F. & L.*, no. 6841. See pp. 335, 358 and 364.

Ludwigia hirtella Raf. Locally abundant in peaty depressions and boggy swales of Chesterfield, Prince George, Sussex and Nansemond Counties. See p. 335.

L. linearis Walt. Prince George County: sphagnous boggy swale, about 3 miles southeast of Petersburg, at head of Poo Run, *F. & L.*, no. 6652. Southampton County: sandy wooded swamp southwest of Cypress Bridge, *F. & L.*, no. 6306. See p. 335.

*Oenothera fruticosa L., var. humifusa T. F. Allen. Sussex County: fallow ploughed field in pineland, about 4 miles northwest of Waverly, *F. & L.*, no. 6440, *F. G. & L.*, no. 6657. See p. 347.

*Oe. fruticosa, var. Eamesii (Robinson) Blake. Sussex County: with the preceding, *F. & L.*, no. 6439, *F. G. & L.*, no. 6658. See p. 347.

Proserpinaca pectinata Lam. Isle of Wight County: swampy depressions in sandy woods, south of Zuni, *F. G. & L.*, no. 6660. See p. 354.

Photo. E. C. Ogden.

LYSIMACHIA LANCEOLATA: FIG. 1, base, × 1, from North Carolina; FIG. 2, calyx, × 4, from Virginia; FIG. 3, bases of cauline leaves, × 4, from North Carolina; FIG. 4, rosette-leaf, × 4, from Pennsylvania.

L. HYBRIDA: FIG. 5, base, × 1, from Massachusetts; FIG. 6, bases of cauline-leaves, × 4, from New Jersey; FIG. 7, calyx, × 4, from New Jersey.

Photo. H. G. Fernald.

GALIUM CIRCAEZANS, var. TYPICUM: FIG. 1, one of the TYPE specimens, × ½, courtesy of Professor H. HUMBERT; FIG. 2, lower leaf-surface, × 5, of plant from Georgia. Var. HYPOMALACUM: FIG. 3, TYPE, × ½; FIG. 4, lower leaf-surface, × 5.

Sanicula gregaria Bickn. Chesterfield County: wooded river-swamp along Appomattox River, near Hopewell, *F. L. & S.*, no. 5866.

*S. canadensis L., var. floridana (Bickn.) H. Wolff. Isle of Wight County: dry sandy yellow pine and oak woods north of Walters, *F. G. & L.*, no. 6661. See p. 354.

Hydrocotyle Canbyi C. & R. Isle of Wight County: along ditch bordering swampy woods, east of Joyner's Bridge, *F. & L.*, no. 6846.

Extension inland from Princess Anne County.

H. ranunculoides L.f. Surry County: margin of pond in cypress swamp, Sunken Meadow Beach, *F. & L.*, no. 6845. Sussex County: pool in pinelands about 4 miles northwest of Waverly, *F. & L.*, no. 6314.

Extension inland from Princess Anne County.

Oxypolis rigidior (L.) C. & R. Prince George County: argillaceous and siliceous boggy depressions, about 3 miles southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 6848.

The only time seen by us south of the James.

Kalmia angustifolia L. Isle of Wight County: "near Franklin," 1893, *Heller*, no. 1124; dry sandy woods and pine barrens south of Zuni, *F. G. & L.*, nos. 6665 and 6666. See p. 354.

The only area in the southeastern counties in which we have seen this essentially northern (even Hudsonian) species. The Isle of Wight material is transitional to the glandless southern extreme:

K. angustifolia L., var. **carolina** (Small), comb. nov. *K. carolina* Small, Fl. Se. U. S. 886, 1336 (1903). The only Virginia material of the variety seen by me is from region of Dismal Swamp, *Biltmore Herb.*, no. 1344[c].

Lyonia lucida (Lam.) C. Koch. Southampton County: margin of cypress swamp by Blackwater River, near Oak Grove School, *F. & L.*, no. 6667. See p. 359.

*Gaylussacia dumosa (Andr.) Torr. & Gray, var. Bigeloviana Fernald. Prince George County: border of dry woods east of Prince George, *F. L. & S.*, no. 5874.

The copiously glandular northern extreme. In the pine-barren areas only typical southern *G. dumosa* was seen.

Vaccinium Elliotii Chapm. Tall, often tree-like shrub up to 3.5 m. high, abundant in thickets and along streams in Southampton County. See p. 331.

*Pyxidanthera barbulata Michx. Isle of Wight County: dry sandy pine barrens, south of Zuni, *F. G. & L.*, no. 6669, *F. & L.*, no. 7137. See p. 355.

Galax aphylla L. To the few Coastal Plain stations add Isle of Wight County: rich wooded bank of Blackwater River near Joyner's Bridge, *F. G. & L.*, no. 6668.

Lysimachia radicans Hook. (*Steironema radicans* (Hook.) Gray.) Southampton County: siliceous and argillaceous alluvium bordering cypress swamp, bottomland of Nottoway River, above Cypress Bridge, *F. & L.*, no. 6332, distributed as *L. lanceolata*, var. *hybrida*. See p. 341.

Lysimachia radicans, characterized by its sprawling or arching habit, with the prolonged stems rooting at nodes and soon reclining, with long-petioled and membranaceous lanceolate to lance-ovate blades, and with small nodding flowers 8–12 mm. long, the calyx-lobes only 3–5 mm. long and exceeded by the capsule, has been standing in our manuals as a plant of Virginia. In the Gray Herbarium *L. radicans* has heretofore been represented only from the Mississippi drainage, Mississippi to eastern Texas, northward to western Tennessee and Missouri. Our material, though very inadequate, can be matched only in that species, but it shows an inclination to whorled leaves and its flowers are all solitary on simple peduncles in the axils of the primary leaves, instead of being borne on axillary branches as in most true *L. radicans*. Fuller material may show the plant of southeastern Virginia to be distinct.

The Identity of Lysimachia lanceolata (Plate 482). In preparing the Synoptical Flora of North America Asa Gray revived the genus *Steironema* Raf. for an American group, which some later authors, for instance Knuth[1] and Handel-Mazzetti,[2] treating the genus from a world-viewpoint, have put back as a section or a subsection into *Lysimachia*. Handel-Mazzetti shows that the characters relied upon to keep American *Steironema* apart break down in some Chinese species of *Lysimachia*, and that *Steironema* "cannot be treated as a different genus as has been done recently by some American botanists." Returning *Steironema* to *Lysimachia* is simple enough; the difficulty is in identification of some of the older types.

When Gray reviewed the plants which he treated as *Steironema lanceolatum* (Walt.) Gray, based upon *Lysimachia lanceolata* Walt. Fl. Carol. 92 (1788), he made it an inclusive species without clearly defined varieties. He published the combinations in 1876, in Proc.

[1] Knuth in Engler, Pflanzenr. iv[237]. 257, 276 (1905).

[2] Handel-Mazzetti in Notes, Roy. Bot. Gard. Edinb. xvi. 52 (1928) and in Die Pflanzenareale, 2 Riehe, v. Karten 44–49 (1929).

Am. Acad. xii. 63, but his definitions were published in the Synoptical Flora:

S. lanceolátum, Gray. Stems erect, a foot or two high, simple or paniculately branched, somewhat angled: leaves lanceolate or linear, an inch or two long, tapering into a short and margined ciliate petiole or attenuated base; the radical and sometimes lowest cauline from oblong to orbicular, small: corolla about two thirds inch in diameter; its divisions conspicuously erose and cuspidate-acuminate, slightly exceeding the lanceolate calyx-lobes.—Proc. Am. Acad. l. c. *S. heterophylla*, Raf. l. c. *S. florida*, Baudo, l. c., chiefly. *Anagallis lutea*, &c., Pluk. Alm. t. 333, f. 1. *Lysimachia lanceolata*, Walt. Car. 92. *L. hybrida & heterophylla*, Michx. Fl. i. 126. *L. ciliata*, var., Chapm. Fl. 280. *L. decipiens*, Bertoloni, Amoen.—Low grounds and thickets, western parts of Canada to Florida, and Nebraska to Louisiana. Polymorphous; the extremes in the following varieties, the first of which verges to the two preceding species.

Var. hýbridum. Cauline leaves mostly petioled, from oblong to broadly linear.—*Lysimachia lanceolata*, var. *hybrida*, Gray, l. c. *L. hybrida*, Michx. l. c. *L. heterophylla*, Ell., Nutt., &c.—Commoner northward and westward.

Var. angustifólium. Stems more branched, a span to 2 feet high: cauline leaves linear, acute at both ends, more sessile, a line or two broad.—*L. angustifolia*, Lam. Ill. i. 440, not Michx. *L. heterophylla*, Michx. l. c. *L. quadriflora*, Ell., hardly of Bot. Mag.—The more marked form mainly southward.[1]

In his earlier paper Gray had noted that "The species are not easy to define, as they incline to run into each other." This attitude toward them may account for Gray's inclusion of *Lysimachia heterophylla* Michx. Fl. Bor.-Am. i. 126 (1803) in the synonymy of both his *Steironema lanceolatum* (typical) and his var. *angustifolium* (Lam.) Gray, which rested upon *L. angustifolium* Lam. Ill. i. 440 (1797?). Subsequent authors, leaving *Steironema lanceolatum* much as defined by Gray, have separated *S. heterophyllum* (Michx.) Raf. from it as a species. There are certainly two well defined species included in Gray's general concept. In dry to moist open woods or thickets or in swales and on shores, but mostly in dryish habitats in the South, from Florida to Louisiana, northward into Pennsylvania, Ohio, southern Michigan and Wisconsin, is a species which for the time being may be called

No. 1. Stems slender and firm, 0.5–7 dm. high, from elongate cord-like or filiform rhizomes and stolons, simple or with ascending branches (the latter often abbreviated); basal leaves often rosulate, oblong, elliptic or rounded, petioled; middle and upper leaves linear to lanceolate or narrowly oblong, bristly-ciliate at base, sessile or subsessile,

[1] Gray, Synop. Fl. N. Am. ii. 61, 62 (1878).

pale beneath; calyx-segments firm, their lateral nerves not evident. Figs. 1–4.

Farther north, extending from Quebec to western Ontario and North Dakota, southward through the northeastern states and more locally to Florida and Texas, is a coarser plant of wet shores, sloughs and swamps. This may be called

No. 2. Stems stoutish, from a soft base, without stolons or slender rhizomes, 0.2–1.5 m. long, ascending or, when very elongate, becoming procumbent, the autumnal basal rosettes sessile or on short thick offshoots; cauline leaves linear-lanceolate to oblong, mostly petioled, green on both sides, the petiole, but rarely the blade, somewhat ciliate; calyx-segments herbaceous, 3-nerved. Figs. 5–7.

No. 1 is the plant described very clearly, though briefly, by Michaux (1803) as *Lysimachia:*

HETEROPHYLLA. L. gracilis, glabra: foliis oppositis; imis suborbiculatis et brevi-petiolatis; superioribus linearibus, sessilibus, basi ciliolatis: floribus cernuis.
Obs. Flores omnino Lysimachiae *ciliatae.*
Pluck. *mantiss.* t. 333. fig. I. Affinis.
Hab. in Georgia.[1]

It had with almost equal clarity been defined some years earlier by Lamarck as

1977 LYSIMACHIA *angustifolia.*
L. foliis linearibus, basi ciliatis, sessilibus; pedunculis unifloris; corollis calyce brevioribus.
E Carolina. *D. Fraser.*[2]

These, it will be noted, were both included by Gray under his *Steironema lanceolatum*, var. *angustifolium*, although *L. heterophylla* Michx. was also put by him under typical *S. lanceolatum.*

Both nos. 1 and 2 may have leaves of any outline from linear or linear-lanceolate and very narrow through broader-lanceolate to oblong. It becomes evident that Gray, not cognizant of the very different bases and other characters of nos. 1 and 2, was merely putting plants with "leaves lanceolate or linear, . . . tapering into a short . . . petiole" into his *Steironema lanceolatum;* those with "cauline leaves linear, . . . more sessile, a line or two broad" into his var. *angustifolium;* and those with "Cauline leaves mostly petioled, from oblong to broadly linear" into his var. *hybridum*, based on *Lysimachia hybrida* Michx. The really diagnostic characters were

[1] Michx. Fl. Bor.-Am. i. 127 (1803).
[2] Lam. Ill. i. 440 (1797 or earlier).

not noted by him. It consequently becomes significant, in going back to Walter's original account of his *L. lanceolata* to read:

> *lanceolata* foliis lanceolatis subsessilibus, petalis acumine terminatis. 2.[1]

The subsessile leaves and the abundance of our no. 1 (*L. angustifolia* Lam. and *L. heterophylla* Michx.) in Walter's territory and the rarity there (if it occurs at all) of our no. 2 make Gray's own examination of the Walter type of utmost importance. Studying Walter's herbarium on February 9th, 1839, Gray, with more modern American specimens for comparison, made the memorandum: "*Lysimachia lanceolata!* = mine from Michigan." This Michigan specimen, ticketed "HERB. A. GRAY" and marked in Gray's hand: "Michigan State Coll.", is very typical broad-leaved *L. angustifolia* Lam. or *L. heterophylla* Michx., showing clearly the cord-like rhizome, the round-tipped basal leaves, the subsessile ciliate-based cauline ones with the characteristic grayish sheen beneath, and the firm sepals. This plant, positively identified by Gray in 1839 with Walter's type, seems to settle the identity of *L. lanceolata* Walt. Singularly enough, however, in the Synoptical Flora, where he relied primarily on leaf-outline, Gray so far forgot his comparison of 1839 as to ticket the Michigan specimen as "*Steironema lanceolatum*, var. *hybridum*," thus making the already confounded confusion still worse!.

With no. 1 of page 439 reasonably settled as LYSIMACHIA LANCEOLATA Walt., the proper name must be found for no. 2, the coarser, thick-stemmed nonstoloniferous plant with middle and upper leaves more petioled and green beneath, and with herbaceous 3-nerved calyx-lobes. Apparently the oldest name for it is L. HYBRIDA Michx. Fl. Bor.-Am. i. 126 (1803). There is no reasonable doubt of the identity. Michaux was distinguishing our no. 1 as his *L. heterophylla*. His *L. hybrida* has "foliis oppositis, longe petiolatis, lanceolatis, basi sensim acutis; petiolo ciliato," etc.; and when I examined it in 1903, familiar only with the coarse plant of New England, I made the note: "*hybrida*. The common *lance*-leaved plant."

Some of the more recent names of Rafinesque, Greene and others doubtless designate variations in leaf-outline of the heteromorphic *Lysimachia lanceolata* and *L. hybrida*. I leave their interpretation to those who see value in them. One of Greene's proposed species of the

[1] Walt. Fl. Carol. 92 (1788).

group is *Stevronema pumilum*. In Rydberg's Flora of the Prairies and Plains is the following key:

"Leaf-blades mostly ovate or ovate-lanceolate, rounded or subcordate at the base; . . . . . 1. *S. pumilum.*
Leaf-blades mostly lanceolate, cuneate at the base; . . . 2. *S. ciliatum.*"

Nevertheless, *S. ciliatum* is thus described just below: "blades ovate or lanceolate, . . . , acute, rounded, truncate, or subcordate at the base."

Lysimachia lanceolata is local in southeastern Virginia. James City County: margin of dried-up pond ½ mile south of Ewell, *Grimes*, no. 4481. Henrico County: exsiccated argillaceous swale, Libbie Avenue, Westhampton, *F. L. & S.*, no. 5888, distributed as *L. heterophylla*. Sussex County: rich oak woods near Moore's Mill, *F. & L.*, no. 7139.

*Fraxinus profunda Bush. Norfolk County: gum swamps and wet woods near Indian Creek, *F. & G.*, no. 4690, distributed as *F. pennsylvanica*. Southampton County: sandy alluvial bottomlands of Three Creek, Drewryville, *F. L. & S.*, no. 5891. See p. 331.

Heretofore known from Louisiana to Georgia, north in the lower regions to Illinois, Indiana and Ohio.

Fraxinus caroliniana Mill., var. **pubescens** (M. A. Curtis), comb. nov. *F. platycarpa*, β. *pubescens* M. A. Curtis in Am. Journ. Sci. ser. 2, vii. 408 (1849). *F. Rehderiana* Lingelsheim in Engler, Pflanzenr. iv[243]. 42 (1920). *F. caroliniana*, var. *Rehderiana* (Lingels.), Sargent in Journ. Arn. Arb. ii. 173 (1921).—Quite as common as the glabrous-leaved typical *F. caroliniana*.

*Ligustrum sinense Lour. York County: border of dry woods, 2 miles south of Yorktown, *F. L. & F.*, no. 4991. Nansemond County: dry sandy woods and adjacent clearings, *F. L. & F.*, no. 4990. Isle of Wight County: border of dry sandy woods south of Zuni, *F. G. & L.*, no. 6670. See p. 353.

Cynoctonum Mitreola (L.) Britton. Prince George County: exsiccated argillaceous swale about 3 miles southeast of New Bohemia, *F. & L.*, no. 6339. Isle of Wight County: muddy margin of Blackwater River, near Joyner's Bridge, *F. & L.*, no. 6851. See pp. 345, 346 and 362.

Sabatia paniculata (Michx.) Pursh. Frequent in dry argillaceous fields, thickets and clearings of Chesterfield and Sussex Counties. See p. 339.

The milk-white corollas always change to yellowish or saffron-colored in the herbarium. Thinking that quick drying might save the color, we employed this method, but specimens which seemed

satisfactory when they came from press had lost their whiteness in a few weeks.

S. BRACHIATA Ell. SUSSEX COUNTY: sandy woods and clearings northwest of Homeville, *F. & L.*, no. 6344; dry argillaceous field north of Littleton, *F. & L.*, no. 6345; seen in abundance near Waverly. See p. 339.

Typical *Sabatia brachiata* has very handsome rosy-pink corollas. Occasional albinos are found, which in the field (see p. 339) strongly suggest *S. paniculata*. Their corollas however, are larger and they do not change to saffron-color after drying. The albino may be called

*S. BRACHIATA, forma **candida**, f. nov., corollis albidis.—VIRGINIA: Waverly, July 20, 1891, *A. B. Seymour*, no. 33, as *S. paniculata;* dry argillaceous field north of Littleton, July 22, 1936, *Fernald & Long*, no. 6346 (TYPE in Gray Herb.). See p. 339.

S. CALYCINA (Lam.) Heller. SOUTHAMPTON COUNTY: in swampy ground, Franklin, 1893, *Heller*, no. 1114[1]; border of muddy pool in Three Creek, Drewryville, *F. L. & S.*, no. 5895; siliceous and argillaceous alluvium bordering cypress swamp, bottomland of Nottoway River, above Cypress Bridge, *F. & L.*, no. 6348. ISLE OF WIGHT COUNTY: sandy alluvial woods, bottomland of Blackwater River, Zuni, *F. & L.*, no. 6349. See p. 340.

S. CAMPANULATA (L). Torr. PRINCE GEORGE COUNTY: argillaceous and siliceous boggy depression southeast of Petersburg, at head of Poo Run, *F. & L.*, no. 6350. SUSSEX COUNTY: sandy and peaty depression (exsiccated shallow pond), about 4 miles northeast of Homeville, *F. & L.*, no. 6351. See p. 337.

Typical *Sabatia campanulata* or *Chironia campanulata* L. (1753), upon which it rests, is, as shown by a photograph supplied by Mr. Savage, the plant which ranges from Massachusetts to eastern Virginia, thence taking to the mountains of North and South Carolina and southward to southern Georgia and Alabama. In this plant the primary cauline leaves are oblong-linear to lanceolate, the pedicels are naked or only slightly bracted, the linear calyx-segments (except in small secondary flowers) 1–2 cm. long, the corolla-segments 1–1.7 cm. long. On the Coastal Plain from Florida to Louisiana and North Carolina occurs *S. gracilis* Michx., which is commonly reduced outright to *S. campanulata*. In its best development, however, it is smaller throughout, with the lower cauline leaves linear, the upper very narrowly so, the pedicels mostly leafy-bracted, the linear-acicular calyx-segments 6–14 mm. long, the corolla-segments 6–14 mm. long. The material from southeastern Virginia stands midway

[1] See Heller, l. c. 24 (1894).

between most typical *S. campanulata* and *S. gracilis*, having the narrow leaves and calyx-segments of the latter but many of the pedicels naked, and the long calyx and large corolla of the former. This transitional series in southeastern Virginia makes it clear that *S. gracilis* should be treated as a geographic variety:

Sabatia campanulata (L.) Torr., var. **gracilis** (Michx.), comb. nov. *Chironia gracilis* Michx. Fl. Bor.-Am. i. 146 (1803).

Gentiana Porphyrio J. F. Gmel. Nansemond County: very rare at border of dry sandy pine woods south of Factory Hill, *F. & L.*, no. 6852. See p. 364.

Bartonia paniculata (Michx.) Muhl. Prince George County: argillaceous and siliceous boggy depressions, about 3 miles southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 6860. Nansemond County: damp sandy and peaty woods and margin of bordering ditch, southwest of Whaleyville, *F. & L.*, no. 6859.

Trachylospermum difforme (Walt.) Gray. Frequent in damp thickets and at borders of wet woods, northward to Henrico County: exsiccated argillaceous swale, Libbie Avenue, Westhampton, *F. L. & S.*, no. 5897.

Here noted because not included in Merriman's *Flora of Richmond and Vicinity*.

Asclepias rubra L. Prince George County: argillaceous and siliceous boggy depressions, about 3 miles southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 5901; similar habitat on headwaters of Blackwater River, *F. L. & S.*, no. 5902. See p. 326.

Acerates viridiflora (Raf.) Eaton. Prince George County: dry pineland west of Prince George, *F. & L.*, no. 5900.

The only time seen by us in the southeastern counties.

Breweria humistrata (Walt.) Gray. Frequent in dry sandy woods and openings, Southampton and Sussex Counties. See pp. 333 and 339.

Hydrolea quadrivalvis Walt. Sussex County: water-hole in sandy and peaty depression (exsiccated shallow pond), about 4 miles northwest of Homeville, *F. & L.*, nos. 6362 and 6671. Southampton County: sandy alluvial bottomlands of Three Creek, Drewryville, *F. L. & S.*, no. 5864. See pp. 332 and 338.

Although the species appears in manuals as a native of Virginia, our collections seem to be the first from north of the extreme southern boundary of the state. Heller's collection (no. 1162) of 1893, the previous basis, is slightly equivocal. It bears a label, headed "Plants of Northeastern North Carolina. Collected near Margarettsville, Northampton Co.," but the label bears the annotation "On the Va. line."[1]

[1] See Heller, l. c. 25 (1894).

Photo. E. C. Ogden.

EUPATORIUM ALBUM, var. TYPICUM: FIG. 1, leaf, × 2, from Virginia; FIG. 2, involucre, × 4, from New Jersey.

Var. GLANDULOSUM: FIG. 3, involucre, × 4, from South Carolina.

Var. MONARDIFOLIUM: FIG. 4, portion of TYPE, × ⅖; FIG. 5, leaf, × 2, from North Carolina; FIG. 6, involucre, × 4, from TYPE.

Var. SUBVENOSUM: FIG. 7, leaf, × 2, from TYPE; FIG. 8, involucre, × 4, from TYPE.

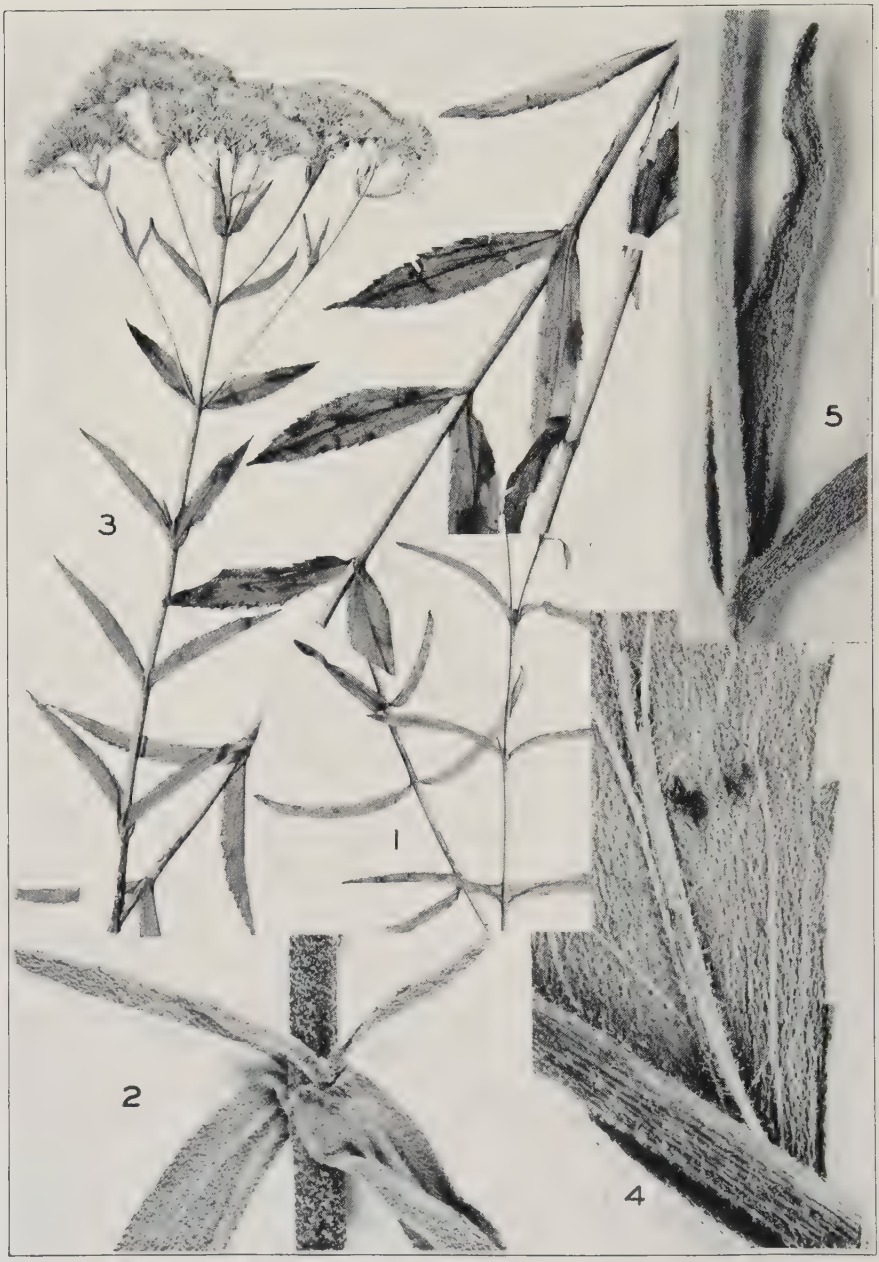


Photo. E. C. Ogden.

EUPATORIUM LEUCOLEPIS: FIG. 1, characteristic foliage, × $\frac{2}{5}$, from New Jersey; FIG. 2, stem and leaf-bases, × 4, from Virginia.

Var. NOVAE-ANGLIAE: FIG. 3, type, × $\frac{2}{5}$; FIG. 4, stem and base of median leaf, × 4; FIG. 5, stem and upper leaves, × 4.

Heliotropium europaeum L. Henrico County: waste places and roadsides, Richmond, *F. L. & S.*, no. 5904.

H. indicum L. Southampton County: sandy alluvial bottomland of Nottoway River, Courtland, *F. & L.*, no. 6862. See p. 366.

Onosmodium virginianum (L.) A. DC. Dinwiddie County: border of dry sandy woods near Carson, *F. L. & S.*, no. 5905.

The only time seen in the southeastern counties.

*Verbena scabra Vahl. Surry County: border of tidal marsh along Gray's Creek, near Cross Creek Landing, south of Swann Point, *F. & L.*, no. 6863. See p. 365.

*Trichostema dichotomum L., var. **puberulum** Fernald & Griscom, var. nov., caulibus puberulis, ramis similibus vel minute glandulosis vix pilosis.—Mississippi to Florida, north locally to southeastern Virginia. type: Duval County, Florida, *Curtiss*, no. 1976 (in Gray Herb.).

The only material we have seen from north of Florida is our collection from Cedar Hill, Norfolk County, no. 2884. All material seen from Florida and Mississippi is clearly of this variety.

Typical *T. dichotomum* L., as ascertained by Mr. C. A. Weatherby on studying the type and as shown by a photograph of it sent from the Linnean Society, is the common and wide-spread plant which has much longer (pilose) pubescence and abundant, usually longer-stalked, glands. Transitional material is common from southern Cape May, New Jersey to southeastern Virginia.

T. lineare Walt. Isle of Wight County: dry sandy yellow pine and oak woods north of Walters, *F. G. & L.*, no. 6675; border of dry sandy woods near Joyner's Bridge, *F. G. & L.*, no. 6676. See p. 357.

Physostegia denticulata (Ait.) Britton. Southampton County: siliceous and argillaceous alluvium bordering cypress swamp, bottomland of Nottoway River, above Cypress Bridge, *F. & L.*, no. 6368. Isle of Wight County: sandy alluvial woods, bottomland of Blackwater River, Zuni, *F. & L.*, no. 6369. See p. 340.

Pycnanthemum clinopodioides T. & G., Norfolk County: border of rich woods, south of Great Bridge, *F. L. & F.*, no. 5021. Nansemond County: dry sandy woods and adjacent clearings, Kilby, *F. L. & F.*, nos. 5023–5025. Sussex County: sandy woods and clearings northeast of Homeville, *F. & L.*, no. 6380.

An inland species rare on the Coastal Plain.

*Pycnanthemum pycnanthemoides (Leavenworth) Fernald, var. **viridifolium**, var. nov., foliis primariis subtus viridescentibus vix canescentibus hispidis; calycis dentibus apice sparse setosis.—Greensville County, Virginia: in clay at border of a dry thicket, near James River Junction, August 19, 1936, *Fernald, Griscom & Long*, no. 6678

(TYPE in Gray Herb.; ISOTYPES in Herb. Phil. Acad., Herb. Griscom and elsewhere). See p. 353.

Typical *Pycnanthemum pycnanthemoides* of the mountains from Virginia and Kentucky to Georgia and Alabama, has, as originally described by Leavenworth (as *Tullia pycnanthemoides* from eastern Tennessee) the leaves whitened beneath. Their lower surfaces are canescent with minute soft pubescence and the calyx-lobes are abundantly supplied with setae. Var. *viridifolium* is a coastal-plain extreme, with the large oval leaves and the very large lilac-purple and conspicuously spotted corolla of the mountain plant, but only the uppermost or bracteal leaves are whitened, the others green and rather coarsely hispid beneath, while the calyx-teeth have only a single (rarely more) terminal bristle. Exactly the same variation is represented in the Gray Herbarium by an old specimen (without locality but presumably near Santee Canal) from *H. W. Ravenel;* and one of Asa Gray's collections (again without stated locality) shows mixed with more characteristic *P. pycnanthemoides* from "Mts. Carol. 1843," a specimen with the green leaves and the pubescence of var. *viridifolium* but with the more bristly calyx-teeth of the mountain plant.[1]

P. VIRGINIANUM (L.) Durand & Jackson. SUSSEX COUNTY: wet sandy thicket, Burt, *F. & L.*, no. 6376.

The only time seen in the southeastern counties.

LYCOPUS EUROPAEUS L. SURRY COUNTY: roadside by sandy thicket, Sunken Meadow Beach, *F. & L.*, no. 6865.

*L. AMERICANUS Muhl., var. LONGII Benner. PRINCE GEORGE COUNTY: argillaceous and siliceous boggy depressions, about 3 miles southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 5910. SUSSEX COUNTY: water-hole in sandy and peaty depression (exsiccated shallow pond), about 4 miles northwest of Homeville, *F. & L.*, nos. 6382 and 6681. NANSEMOND COUNTY: ditches bordering sandy woods, Factory Hill, *F. & L.*, no. 6682. See p. 329.

*MICRANTHEMUM UMBROSUM (Walt.) Blake. SOUTHAMPTON COUNTY: sandy alluvial bottomlands of Three Creek, Drewryville, *F. L. & S.*, no. 5913. ISLE OF WIGHT COUNTY: muddy margin of Blackwater River, near Joyner's Bridge, *F.&L.*, no. 6866. See pp. 331 and 362 and MAP 8.

CHELONE CUTHBERTII Small. PRINCE GEORGE COUNTY: swampy woods west of New Bohemia, *F. L. & S.*, no. 5911. SOUTHAMPTON

[1] In studying this series it has been found necessary to make the following combination:

PYCNANTHEMUM **Beadlei** (Small), comb. nov. *Koellia Beadlei* Small in Bull. Torr. Bot. Cl. XXV. 470 (1898).

County: sandy wooded swamp southwest of Cypress Bridge, *F. & L.*, no. 6388. See p. 328 and map 3.

Penstemon australis Small. Southampton County: dry sandy oak and pine woods northeast of Cypress Bridge, *F. & L.*, no. 6384; sandy thickets and openings along Nottoway River at Sycamore Bend, *F. & L.*, no. 6386. Sussex County: dry sandy hickory and oak woods, Burt, *F. & L.*, no. 6385. Isle of Wight County: dry sandy yellow pine and oak woods near Walters, *F. & L.*, no. 6387. See p. 339.

Slight northern extension.

Scrophularia marilandica L. Sussex County: dry sandy hickory and oak woods, Burt, *F. & L.*, no. 6383. See p. 342.

The only time seen in the southeastern counties.

*Seymeria cassioides (Walt.) Blake. Greensville County: sandy clearing north of Emporia, *F. G. & L.*, no. 6690. Isle of Wight County: dry sandy pine barrens south of Zuni, *F. G. & L.*, no. 6691, *F. & L.*, no. 6867. See pp. 352 and 355 and map 24.

Buchnera americana L. Prince George County: dry sandy pine woods about 3 miles southeast of Petersburg, on headwaters of Blackwater River, *F. L. & S.*, no. 5918, *F. & L.*, no. 6736.

Apparently the first known station on the Coastal Plain of Virginia, unless Clayton, whose explorations extended west to the Shenandoah Valley, got it in the eastern counties. See p. 329.

Schwalbea americana L. Greensville County: sandy clearing north of Emporia, *F. G. & L.*, no. 6695. See p. 352 and map 23.

Our material is very mature, much of the fruit already disintegrating, but on the lower internodes and on the intact fruiting calyces the characteristic reflexed hairs are apparent and the anterior sepals are blunt, as reputed in the northeastern series of specimens, which Pennell treats as typical *Schwalbea americana*. In his detailed discussion of the group Pennell cites *S. americana* as occurring from "Massachusetts and New York to Maryland and perhaps Virginia"—Pennell, Scroph. E. N. Am. 486 (1935). He there states that *S. americana* was "Based wholly upon Gronovius' Flora Virginica 71. 1743, where the plant is described and typified by Clayton's number 33 from Virginia. This, seen in Herb. British Museum (Natural History) at London, is the northern species now considered. How Clayton obtained the plant, and even whether it came from Virginia is uncertain, since Gronovius' label quotes this remark of his: 'A plant very uncommon, wholly unknown to me: though I think it agrees in most respects with the Clandestina of Tournefort,' while another slip states: 'Mr. Clayton of Virginia An. 1734. Numb. 33', doubtless recording the year of receipt by Gronovius."

The statement of Clayton that the plant was "wholly unknown to me" apparently simply meant that he did not recognize it, not that he had received it from some source outside Virginia; and his statement hardly justifies doubt of his having personally collected the plant. At least, we now know *Schwalbea americana* from Virginia, whence it was described, although it is possible that Clayton secured it farther to the north in the state, our station being in one of the southernmost counties (bordering North Carolina). From Clayton's map of Virginia, however, it is evident that he was cognizant of the region southward, he showing the Nottoway River (his no. 48) with its tributary, the Blackwater (no. "49 Nigra aqua").

Pennell separates the more southern material (North Carolina and Kentucky to Florida and Louisiana) as *Schwalbea australis* Pennell in Proc. Acad. Nat. Sci. Phila. lxxi. 289 (1920). His key-differences, in his later treatment, are as follows:

"A. Pubescence of stem, pedicels, and calyx consisting of upcurved, usually shorter hairs; leaf-blades elliptic-oval, usually about 1.5 cm. wide, usually more obscurely veined; anterior calyx-lobes acute or acutish.....1. *S. australis.*
AA. Pubescence of stem, pedicels, and calyx consisting of recurved hairs; leaf-blades elliptic-lanceolate, rarely over 1 cm. wide, usually evidently veined; anterior calyx-lobes obtuse.....2. *S. americana.*"

The more extreme specimens are well marked but minute "upcurved" pubescence occurs on some Massachusetts specimens; in fact, a fine specimen in the Gray Herbarium from Sandwich, Massachusetts, has such pubescence and Pennell has annotated it in the herbarium as *Schwalbea australis.* Its anterior calyx-lobes, however, are blunt as in *S. americana,* but its oval leaves are 2 cm. broad, extreme even for *S. australis* and surely for *S. americana* as defined. Although in the Gray Herbarium Pennell correctly marked this embarrassing plant as *S. australis,* he cites it as *S. americana.* I do not see how it and *Curtiss,* no. 6742, TYPE of *S. australis,* essentially differ; the latter, as represented in the Gray Herbarium, likewise has its lower leaves 2 cm. broad. Narrower-leaved plants do occur in both the North and the South but of the 7 southern sheets (*S. australis)* 4 have their broadest leaves only 8–13 mm. broad, while the majority of northern plants show their broadest leaves 7–12 mm. broad. I am unable to separate two varieties and much less two species.

PEDICULARIS LANCEOLATA Michx. CHESTERFIELD COUNTY: wooded

river-swamp along Appomattox River near Hopewell, *F. L. & S.*, no. 5919.

Slight extension southward.

[UTRICULARIA VIRGATULA Barnhart. In a previous paper, RHODORA, xxxviii. 444 (1936), I recorded the station in Northampton County as "An important discovery, giving us a station intermediate between Cape May, New Jersey and Florida and Cuba." Dr. S. F. Blake kindly calls my attention to a station recorded in Hitchcock & Standley's *Flora of the District of Columbia and Vicinity*, 255 (1919) near Suitland, about as far west of Cape May as the Savage Neck station is to the south. I apologize for overlooking the record, somewhat obscured under the alias *Stomoisia virgatula*.]

*CATALPA SPECIOSA Warder. SOUTHAMPTON COUNTY: border of dry woods, Ivor, probably original trees planted but now well naturalized, *F. & L.*, no. 6396, *F. G. & L.*, no. 6696. See p. 347.

THE TYPE OF GALIUM CIRCAEZANS (PLATE 483). *Galium circaezans* consists of two well defined geographic varieties. The wide-ranging plant of the North, from Maine and southwestern Quebec to Minnesota and Nebraska, south in the uplands to interior North Carolina, Kentucky, Missouri and Oklahoma, is coarser than the southern extreme, its larger leaves 2–5 cm. long and 1–2.5 cm. broad, their nerves conspicuously long-hirsute beneath. In the South, from Florida to Texas, the plant is more slender and with smaller and less pubescent leaves, the larger ones only 1.5–2.5 cm. long by 0.7–1.4 cm. broad, the nerves beneath sparingly short-hispid to glabrous. This southern extreme meets the northern in Virginia and elsewhere, extending very locally to Rhode Island, Connecticut, New York, Kentucky and southern Michigan. Impressed by the general occurrence of the small- and smoother-leaved extreme in the South, it has seemed important to determine just what Michaux had before him when he described *G. circaezans* from Carolina. Through the great courtesy of Professor Humbert and the skill of M. Cintract I now have a remarkably clear photograph of the type (FIG. 1). It consists of three fruiting stems of the southern extreme, its blunt, oval leaves 1.5–2 cm. long by 7–12 mm. broad, with very short and scattered hispidity on the veins beneath. It was perfectly described by Michaux, "foliis quaternis, ovalibus, . . . margine ciliato nervisque (armato oculi) hirsutulis"; and it is the blunt-leaved form of the nearly smooth plant described as *G. circaezans* var. *glabrum* Britton, from eastern New York.

Since typical *Galium circaezans* is the chiefly southern extreme with

small and sparsely hispid to glabrous leaves, the more northern extreme may be called

Galium circaezans Michx., var. **hypomalacum,** var. nov. (tab. 483, fig. 3 et 4), foliis majoribus 2–5 cm. longis 1–2.5 cm. latis, nerviis subtus longe hirsutis.—Dry woods, southern Quebec to Minnesota, south to the uplands of North Carolina, Kentucky, Missouri and Oklahoma. type: open dry woods, Peoria, Illinois, July, 1903, *F. E. McDonald* in Gray Herb.

The bibliography of typical *Galium circaezans* follows.

Galium circaezans Michx., var. **typicum.** *G. circaezans* Michx. Fl. Bor.-Am. i. 80 (1803). *G. boreale?* Walt. Fl. Carol. 87 (1788), not L. *G. circaeoides* R. & S. Syst. iii. 256 (1818). Var. *glabrum* Britton in Bull. Torr. Bot. Cl. xxi. 32 (1894). Var. *glabellum* Britton, Mem. Torr. Bot. Cl. v. 303 (1894).

In plate 483, prepared by Henry G. Fernald, fig. 1 is one of the type specimens of var. typicum, × ½; fig. 2, the lower leaf-surface of var. typicum, × 5, from Marietta, Georgia, *R. N. Larrabee.* Fig. 3 is the type of var. hypomalacum, × ½; fig. 4 the lower surface of a leaf, × 5.

Houstonia tenuifolia Nutt. Sussex County: dry sandy hickory and oak woods, Burt, *F. & L.*, no. 6400. See p. 342.

*H. lanceolata (Poir.) Britton. Nansemond County: Suffolk, July 15, 1895, *J. W. Blankinship.*

A species of the interior of the continent, Alabama to Oklahoma, north to Kentucky, Illinois and Missouri. On the Atlantic slope, locally from eastern Virginia to southern Maine.

Only station seen for this and several companion species on the Coastal Plain.

*Oldenlandia Boscii (DC.) Chapm. Southampton County: open sandy borders of pools and depressions, bottomland of Nottoway River, Courtland, *F. & L.*, no. 6700. See p. 359.

Symphoricarpos orbiculatus Moench.

The frequent statement that *Symphoricarpos orbiculatus* is naturalized or a garden escape eastward does not apply to southeastern Virginia. From Dinwiddie to Surry County and southward it is a consistent part of the native thickets and undergrowth. In fact, it was recorded from Virginia by Pursh, in 1814, as *Symphoria glomerata.*

Lobelia glandulifera (Gray) Small. Prince George County: argillaceous and siliceous boggy depressions, about 3 miles southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 6877; exsiccated argillaceous swale about 3 miles southeast of New Bohemia, *F. & L.*, nos. 6406 and 6876. See pp. 339, 345 and 363 and map 20.

The Varieties of Eupatorium album (Plate 484). *Eupatorium album* L., distinguished at a glance by its oblanceolate, narrowly obovate, broadly oblong or narrowly ovate leaves and its prolonged acuminate or attenuate scarious involucral bracts, has proved somewhat perplexing in the field. Upon studying all the material at hand the species seems to resolve itself into four geographic varieties, three of them strongly defined, the fourth perhaps better treated as a forma, though, because of a certain geographic segregation, I am, for the present, maintaining it as a variety. For a beautifully clear photograph of the type of *E. album* I am indebted to the well-known kindness of Mr. Spencer Savage, Assistant Secretary of the Linnean Society of London. As I understand the species it breaks as follows:

a. Principal leaves spatulate, oblanceolate or narrowly obovate, obtuse, narrowed at base, they and the stem villous or strongly pilose.
Involucre glandless or essentially so ..... Var. *typicum.*
Involucre copiously dark-glandular ..... Var. *glandulosum.*
a. Principal leaves oblong, oblong-lanceolate or narrowly oblong-ovate, acute, the broad bases more rounded, their pubescence short and sparse or wanting.
Leaves firm, the larger with 10–20 prominent coarse teeth on each margin, pinnately veined ..... Var. *monardifolium.*
Leaves submembranaceous to firm, the larger with 3–10 low teeth on each margin or entire, triple-nerved from the base ..... Var. *subvenosum.*

Var. **typicum.** *E. album* L. Mant. 111 (1767).—Dry or sandy woods, thickets and clearings, Coastal Plain, New Jersey to Cape Charles, Virginia, locally inland to the District of Columbia; along or on the mountains, South Carolina and Georgia, extending out to the Coastal Plain in South Carolina, northwestern Florida and southeastern Alabama. Figs. 1 and 2. Map 35.

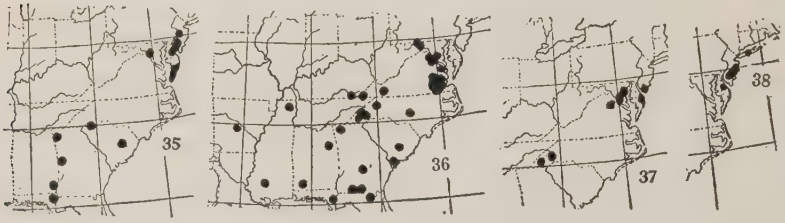
In our Virginia field-work we have seen var. typicum (with glandless or essentially glandless involucres) only on the Eastern Shore where it is abundant. We have never met it or any variety of the species in the two southeastern counties; but from Nansemond County to the Fall Line all the plants (very many) which we have seen have copiously glandular involucres and belong to the next.

*Var. **glandulosum** (Michx.) comb. nov. *E. glandulosum* Michx. Fl. Bor.-Am. ii. 98 (1803). *E. stigmatosum* Bertol. Misc. v. 15, t. 5 (1846).—From the Inner Coastal Plain and Piedmont of Maryland and Virginia to central Arkansas, south to northern Florida, southern Alabama, southern Mississippi and (?) Louisiana. Fig. 3. Map 36.

Michaux's diagnosis, "calycibus 5-floris, creberrime glandulosopunctatis, lineari-subulatis," supported by a photograph of his type

("in aridis sylvarum Carolinae") secured by the late Dr. Robinson, leaves no doubt as to the identity of his *E. glandulosum*. Similarly Bertolini's beautiful plate and his "squamis . . . linearibus, acuminatis . . . nigropunctatis" satisfactorily identify his *E. stigmatosum*. In our Virginia field-work we did not meet var. *glandulosum* on the Eastern Shore, where var. *typicum* abounds; conversely, although var. *glandulosum* abounds on the Inner Coastal Plain, we met no satisfactory var. *typicum* there.

*Var. **monardifolium**, var. nov. (TAB. 484, FIG. 4–6), foliis oblongis vel oblongo-lanceolatis vel anguste oblongo-ovatis firmis scabris basi rotundatis apice acuminatis margine grosse serratis vel serrato-dentatis, dentibus utrinque 10–20.—Cape May, New Jersey and adjacent Delaware; Prince George County, Maryland to western



MAP 35, range of EUPATORIUM ALBUM var. TYPICUM; 36, var. GLANDULIFERUM; 37, var. MONARDIFOLIUM; 38, var. SUBVENOSUM.

North Carolina. NEW JERSEY: dry, sandy soil, Cape May Point, August 26, 1922, *Fogg*, no. 195. DELAWARE: oak copse, Rehoboth, September 5, 1908, *J. R. Churchill*. MARYLAND: dry soil, between Muirkirk and Contee, September 5, 1910, *A. H. Moore*, no. 4823; gravelly field, near Chillum, September 24, 1926, *S. F. Blake*, no. 9723 (TYPE in Gray Herb.). VIRGINIA: wooded ridge north of Beverley, Fauquier Co., September 29, 1935, *H. A. Allard*, no. 994. NORTH CAROLINA: Burke Co., *Buckley* (cited by Gray in Synop. Fl. as doubtfully his var. *subvenosum*); moist grounds near Biltmore, September 2, 1897, *Biltmore Herb.*, no. 399[b]; woodlands near Biltmore, September 14, 1909, *Biltmore Herb.*, no. 3816.[b] MAP 37.

When he described *Eupatorium album*, var. *subvenosum* from Long Island and the Pine Barrens of New Jersey Asa Gray cited the Burke County plant with doubt; and on the sheet he noted "Leaves less 3-nerved." This is indeed the case and with the coarser and more abundant teeth and the harsher and firmer leaf-surfaces the pinnate venation well sets off var. *monardifolium*. Its limited and rather inland range, as thus far known, and its isolation at Cape May and in ad-

Photo. E. C. Ogden.

CHRYSOPSIS MARIANA, both figs. × 8: FIG. 1, involucre from New Jersey; FIG. 2, from Virginia.

Var. MACRADENIA, both figs. × 8: FIG. 3, involucre from Waverly, Virginia (TYPE); FIG. 4, from near Williamsburg, Virginia.

Photo. E. C. Ogden.

RUDBECKIA HIRTA: FIG. 4, lower surface of leaf, × 10, from Rhode Island.
Var. SERICEA: FIG. 3, lower surface of leaf, × 10, from North Dakota.
Var. CORYMBIFERA: FIG. 1, TYPE, × 2/5; FIG. 2, lower surface of leaf, × 10.

jacent Delaware are interesting in view of the considerable continental element in the Cape May flora, as emphasized by Stone and others.

Var. SUBVENOSUM Gray, Synop. Fl. N. Am. i². 98 (1884).—Known only from pine-barrens of Long Island, New Jersey and Delaware. FIGS. 7 and 8. MAP 38.

*EUPATORIUM LEUCOLEPIS (DC.) Torr. & Gray. CHESTERFIELD CO.: exsiccated argillaceous swale west of Petersburg Turnpike, north of Swift Creek, *F. & L.*, nos. 6408, 6878. PRINCE GEORGE CO.: argillaceous and siliceous boggy depression, about 3 miles southeast of Petersburg, at head of Poo Run, *F. L. & S.*, no. 6879. See pp. 344 and 360.

The first collections, apparently, from between South Carolina and Delaware. See p. 345. The Virginia plant, like the material from South Carolina, Georgia, Florida, Alabama and Louisiana is quite like the typical plant of Delaware and New Jersey. The species was based on *E. glaucescens*, β *leucolepis* DC. Prodr. v. 177 (1836). This was the characteristic New Jersey plant, as shown by a photograph of the type secured by the late Dr. B. L. Robinson in 1905.

The plant of southern Rhode Island and southeastern Massachusetts which has passed as *Eupatorium leucolepis* is a strongly defined geographic variety which I am calling

EUPATORIUM LEUCOLEPIS (DC.) Torr., var. **novae-angliae**, var. nov. (TAB. 485, FIG. 3–5), caulis internodiis superioribus pilosis; foliis plerumque planis subacuminatis acute serratis dentibus subpatentibus subtus pilosis vel hispidis; venis lateralibus primariis subtus elevatis basi longe decurrentibus.—Pond-shores, Plymouth Co., Massachusetts and Washington County, Rhode Island. MASSACHUSETTS: shore of Smelt Pond, Kingston, August 30, 1908, *W. P. Rich & C. H. Knowlton;* muddy margin, Micajah's Pond, Plymouth, September 13, 1925, *L. B. & F. E. Smith, jr.;* edge of Triangle Pond, Plymouth, August 26, 1928, *Griscom*, no. 12,706 (exceptionally small-leaved); gravelly upper beach of King Pond, Plymouth, August 30, 1928, *Fernald & Griscom*, no. 1076; damp sandy shore of Loon Pond, Lakeville, August 26, 1913, *Fernald & Long*, no. 10,492 (TYPE in Gray Herb.). RHODE ISLAND: sandy and peaty shore, southern end of Long Pond, South Kingstown, September 5, 1914, *Collins & Fernald*, no. 11,444; granitic gravel and sand about small pond east of Long Pond, South Kingstown, September 5, 1914, *Collins & Fernald* in Pl. Exsicc. Grayanae, no. 280.

In typical *Eupatorium leucolepis* (FIGS. 1 and 2) the pubescence of the stem is much finer than in var. *novae-angliae*, a cinereous puberulence (FIG. 2); the leaves are commonly plicate and blunt, with sup-

pressed or appressed low teeth (FIG. 1), the lower surface minutely and canescently puberulent (FIG. 2) or subglabrous, and the triple nervation starts at the base of the leaf (FIG. 2). Ordinarily the leaves are smaller and they decrease in size more rapidly up to the inflorescence. In var. *novae-angliae* the upper internodes and the lower leaf-surfaces have longer and coarser pubescence, the usually flat leaves are subacuminate, usually larger and more gradually decreasing in size to the summit of the stem, sharply serrate, and the 2 strong lateral nerves, producing the "triple-nerving," leave the midrib well above the base, their lower one-fourth or one-fifth being decurrent along the midrib.

FIG. 1 is of a plant of typical *Eupatorium leucolepis*, × 2/5; FIG. 2 an internode and the bases of leaves, × 4. Var. *novae-angliae* is similarly shown: FIG. 3 the TYPE, × 2/5; FIG. 4 internode and leaf-bases, × 4.

It is noteworthy that the New England stations of the variety are all in the areas which recent studies indicate were uninvaded by Wisconsin ice. The migration to or from southern New England over the now submerged continental shelf was in pre-Pleistocene or in an early Pleistocene inter-glacial epoch, antedating the Wisconsin. The southern and the northern areas have, consequently, been long enough separated to establish marked varietal differences; but the involucres, achenes and corollas show no constant differences which we should demand if the two plants were to be considered specifically separate.

KUHNIA EUPATORIOIDES L. DINWIDDIE COUNTY: border of dry sandy woods near Carson, *F. L. & S.*, no. 5930.

The only time seen by us in the southeastern counties.

*CARPHEPHORUS BELLIDIFOLIUS (Michx.) T. & G. ISLE OF WIGHT COUNTY: dry sandy pine barrens south of Zuni, *F. G. & L.*, no. 6707, *F. & L.*, no. 6883; border of dry sandy woods near Joyner's Bridge, *F. G. & L.*, no. 6708. See pp. 354, 355 and 357.

*C. TOMENTOSUS (Michx.) T. & G. ISLE OF WIGHT COUNTY: open white sand in dry pine barrens, south of Zuni, *F. G. & L.*, no. 6709, *F. & L.*, no. 6882. See pp. 355 and 361.

LIATRIS SQUARROSA (L.) Willd. Frequent in HENRICO COUNTY. Otherwise seen by us only in PRINCE GEORGE COUNTY: dry sandy open soil south of Petersburg, *F. & L.*, no. 6416.

CHRYSOPSIS GRAMINIFOLIA (Michx.) Nutt. All material collected by us on the EASTERN SHORE and in PRINCESS ANNE COUNTY, westward to ISLE OF WIGHT and NANSEMOND COUNTIES is the glandless typical form of the species. In Prince George County all colonies examined are the glandular

C. GRAMINIFOLIA, var. ASPERA (Shuttlew.) Gray. PRINCE GEORGE COUNTY: dry sandy pine woods about 3 miles southeast of Petersburg, on headwaters of Blackwater River, *F. & L.*, no. 6711; dry sandy pine woods about 3 miles northwest of Disputanta, *F. & L.*, no. 6418; border of argillaceous and siliceous boggy depression north of Gary Church, *F. & L.*, no. 6712.

*CHRYSOPSIS MARIANA (L.) Nutt., var. **macradenia**, var. nov. (TAB. 486, FIG. 3 et 4), pedunculis involucrisque grosse glandulosis, glandulis plerumque stipitatis sordidis vel fuscis.—Virginia and West Virginia to the mountains of North Carolina. The following are characteristic. VIRGINIA: 1 mile northwest of Williamsburg, October 19, 1920, *Grimes*, no. 3191; dry pine and oak woods about 3 miles southwest of Waverly, October 20, 1936, *Fernald & Long*, no. 6885 (TYPE in Gray Herb.; ISOTYPE in Herb. Phil. Acad.); woods near Hopewell Gap, Bull Run Mts., September 22, 1935, *H. A. Allard*, no. 932. WEST VIRGINIA; dry clay soil, Clintonville, Greenbrier County, August 13, 1922, *L. F. & F. R. Randolph*, no. 1297. NORTH CAROLINA: barrens, alt. 3000 ft., Swain Co., August 20, 1891, *Beardslee & Kofoid;* Waynesville, September 25, 1897, *T. G. Harbison;* below Satulah Mt., Highlands, September 2, 1902, *E. E. Magee.*

Typical and wide-spread *Chrysopsis mariana* has minute cinereous glandularity (FIGS. 1 and 2) on the involucre and peduncles, the glands varying from short-stipitate to subsessile and in all the material I have seen from southern New York, New Jersey, Pennsylvania, Delaware, Maryland, the East Shore and Princess Anne and Norfolk Counties, Virginia, and southward into Florida, also from Ohio to Alabama and Mississippi, the minute glands are pale. Familiar with the typical plant with minute and pale glandularity, we were at once struck by the heavy and dark glands of var. *macradenia.* The specimens at hand suggest the familiar Allegheny-Blue Ridge-Coastal Plain affinity.

In Florida *Chrysopsis mariana* passes insensibly into the local extreme with involucre viscid-puberulent and barely glandular. This is

. C. MARIANA, var. **floridana** (Small), comb. nov. *C. floridana* Small, Fl. Se. U. S. 1183, 1339 (1903).

In PLATE 486 peduncles and bases of involucres, × 8, of the two varieties which occur in Virginia are shown to make clear the differences.

SOLIDAGO FISTULOSA Mill. Common in the easternmost counties, its western limit in this region seems to be in ISLE OF WIGHT COUNTY: along ditch bordering swampy woods, east of Joyner's Bridge, *F. & L.*, no. 6889.

S. GRAMINIFOLIA (L.) Salisb., var. POLYCEPHALA Fern. SUSSEX COUNTY: swampy depression in pinelands about 4 miles northwest of Waverly, *F. & L.*, no. 6891. See p. 361.

*S. GYMNOSPERMOIDES (Greene) Fern. NORTHAMPTON COUNTY: open thicket back of salt marsh, east of Eastville, *F. & L.*, no. 5528.

A characteristic species of the prairie region from Minnesota to Nebraska, south to Louisiana and Texas. Its isolation in the East very surprising but singularly paralleled in a few cases, such as *Eleocharis Lindheimeri* (MAP 58) at False Cape.

*BOLTONIA *sp.*

The plant referred to on p. 358 is an undescribed species otherwise known only from southeastern South Carolina. Its publication awaits completion of an extended study of the genus.

ASTER CORDIFOLIUS L. SURRY COUNTY: border of woods, Clermont Wharf, *F. & L.*, no. 6895.

Apparently an intrusion into the Coastal Plain by way of the James River.

*GNAPHALIUM SPATHULATUM Lam. HENRICO COUNTY: waste places and roadsides, Richmond, *F. L. & S.*, nos. 5940 and 5941.

G. CALVICEPS Fern. DINWIDDIE COUNTY: roadside at border of sandy woods near Carson, *F. L. & S.*, no. 5942. Also noted but not collected near Hopewell, CHESTERFIELD COUNTY.

Extension inland from Cape Henry region.

GNAPHALIUM OBTUSIFOLIUM L., var. PRAECOX Fern. Common in borders of dry sandy woods and thickets in GREENSVILLE, SOUTHAMPTON, SUSSEX and ISLE OF WIGHT COUNTIES. See p. 340.

SILPHIUM COMPOSITUM Michx. Borders of dry sandy woods and in sandy clearings, frequent northward to CHESTERFIELD and PRINCE GEORGE COUNTIES. See p. 329.

HELIOPSIS HELIANTHOIDES (L.) Sweet, var. **solidaginoides** (L.) comb. nov. *Silphium solidaginoides* L. Sp. Pl. 920 (1753).

Photographs kindly sent me by Mr. Savage and by Mr. Ramsbottom of the material in the Linnean Herbarium and similar material in Clayton's herbarium at the British Museum show *Silphium solidaginoides* to be a small-headed southern extreme of *Heliopsis helianthoides*. Besides the Clayton collection the following have been examined.

VIRGINIA: dry wooded slope, Tutters Neck Pond, southeast of Williamsburg, September 24, 1921, *Grimes*, no. 4462; rich woods, Great Neck, Princess Anne County, September 5, 1935, *Fernald & Long*, no. 5122. WEST VIRGINIA; near Miller School, Lincoln County, July 2, 1929, *W. Va. Univ. Bot. Exped.* GEORGIA: open field by Dixie Lake, 2 miles east of Athens, June 21, 1934, *L. M. Perry*, no. 1092. ALABAMA: locality not stated, *Gates*.

Var. *solidaginoides* differs from the wide-ranging typical *Heliopsis helianthoides* in its very small heads and thinner and basally more tapering leaves. In typical *H. helianthoides* the firm leaves are commonly (though not always) more rounded at base; the central and largest heads are much coarser, with the outer bracts 3–6 mm. broad, the disk 1–1.6 cm. high and 1.7–2.5 cm. broad; the ligules are 5–8 mm. broad; the disk-corollas 4–5 mm. long with prolonged lobes; the achenes also 4–5 mm. long.

Heliopsis helianthoides, var. *solidaginoides* in its small heads and achenes approaches the southern *H. gracilis* Nutt. (1841) = *H. minor* (Hook.) Mohr (1901). The latter is a slender more or less decumbent plant with much smaller leaves (1–3 cm. broad), smaller heads and shorter achenes. It occurs from Georgia and Florida to Arkansas and Louisiana. It was *H. laevis*, var. *minor* Hook. Comp. Bot. Mag. i. 98 (1835), described from Drummond's material from Louisiana, a good sheet of which is before me. When Farwell made the combination *H. helianthoides*, var. *minor* (Hook.) Farwell in Mich. Acad. Sci. Rep. xix. 260 (1917) for a monocephalous Michigan plant it is probable that his material was not like that from Louisiana.

*Rudbeckia hirta, var. **corymbifera**, var. nov. (tab. 487, fig. 1 et 2), villosis; caulibus valde corymboso-ramosis, ramibus erectis foliosis, pedunculis abbreviatis (1–5 cm. longis); ligulis 1–2 cm. longis.—Argillaceous fields and clearings of Chesterfield and Prince George Counties, Virginia. Type: argillaceous field, Half-way House, Chesterfield County, Virginia, June 20, 1936, *Fernald, Long & Smart*, no. 5947 (in Gray Herb., isotypes in Herbs. Phil. Acad. and Univ. Richmond); also from same station (topotypes), *Fernald, Long & Smart*, no. 4946 and *Fernald & Long*, no. 6432.

Var. *corymbifera* departs at once from the other varieties of *Rudbeckia hirta* in its leafy erect branches at the summit of the stem and in its very short or almost suppressed peduncles. In its extreme development (fig. 1) it is unusually villous and the lower surfaces of the leaves have a dense and very soft pubescence (fig. 2) suggesting that of var. *sericea*,[1] but longer. Typical *R. hirta*, var. *sericea*, var. *monticola*[2] and var. *Brittonii*[3] all have long naked peduncles, the first or leading head of the stem standing high on a peduncle 6–35 cm.

[1] Rudbeckia hirta L., var. **sericea** (T. V. Moore), comb. nov. *R. sericea* T. V. Moore in Pittonia, iv. 178 (1900).

[2] R. hirta L., var. **monticola** (Small), comb. nov. *R. monticola* Small in Torreya i. 67 (1901).

[3] R. hirta L., var. **Brittonii** (Small), comb. nov. *R. Brittonii* Small in Mem. Torr. Bot. Cl. iv. 130, t. 79 (1894).

long. In order to show the relationship of var. *corymbifera* I am appending the following key.

a. Heads definitely peduncled, the first or leading head of the primary axis on a naked peduncle becoming 6–35 cm. long (1/5–1/2 height of the plant) above the uppermost well developed leaf. . . . *b.*

b. Basal leaves oblanceolate, 1–3 (–5) cm. broad; cauline leaves from linear-lanceolate to lance-elliptic or oblanceolate, the lowest sessile ones 0.5–2 (–3) cm. broad, entire or nearly so.

Pubescence of the lower leaf-surfaces variously spreading, with broad open glabrous areas between the conspicuous green bulbous bases of the trichomes. . . . . *R. hirta* (typical).

Pubescence of both leaf-surfaces closely appressed (or chiefly so), the crowded hairs chiefly parallel with the midrib, with minute or obscure pale bulbous bases. . . . Var. *sericea.*

b. Basal leaves ovate to rhombic-oval, 2.5–7 cm. broad; cauline leaves mostly with ovate blades, the lowest sessile ones (2–) 2.5–6.5 cm. broad, usually coarsely toothed.

Inner bracts of involucre linear or linear-lanceolate. . . Var. *monticola.*

Inner bracts of involucre oblong. . . . . Var. *Brittonii.*

a. Heads subcorymbose, on short leafy erect branches, the central head on a peduncle only 1–5 cm. long (1/60–1/15 the height of the plant); leaves as in typical *R. hirta* in outline. . . . . Var. *corymbifera.*

Fig. 4 is of characteristic pubescence, × 10, of the lower surface of a leaf of typical *Rudbeckia hirta* from Rhode Island, to show the scattered trichomes and their large bulbous bases; fig. 3 is of characteristic pubescence of the lower surface of var. *sericea*, and fig. 2 that of var. *corymbifera.*

These three varieties of *Rudbeckia hirta* all become weedy; and typical *R. hirta* and var. *sericea* have spread generally over the Northeastern States and eastern Canada. So far as we yet know, var. *corymbifera* is restricted to the inner border of the Coastal Plain in Virginia. Vars. *monticola* and *Brittonii* are more conservative woodland plants, the former occurring from Berkshire County, Massachusetts to Illinois, south to Georgia and Alabama, the latter from western Virginia and West Virginia to Alabama. I am taking as var. *Brittonii* the plant described and illustrated by Small, originally from "southern slopes of White Rock Mountain," one of "the highest points in Virginia." Something seems to have slipped, for in Small's *Manual* (1933) his *R. Brittonii* is given the restricted range, "Ala. [bama] to Tenn. [essee]".[1]

[1] In organizing the material of *Rudbeckia* I have found it necessary to make the following transfers.

R. subtomentosa Pursh, forma **Craigii** (Sherff), comb. nov. Var. *Craigii* Sherff in Rhodora, xiv. 164 (1912).

R. triloba L., var. **Beadlei** (Small), comb. nov. *R. Beadlei* Small, Fl. Se. U. S. 1258 (1903).

Helianthus mollis Lam. Sussex County: locally abundant on railroad bank about 3 miles southeast of Waverly, *F. & L.*, no. 6433.

*Bidens connata Muhl., var. fallax (Warnst.) Sherff. Sussex County: swale at border of woods, 4 miles south of Stony Creek, *F. G. & L.*, no. 6729.

*Coreopsis gladiata Walt. Nansemond County: thickets and ditches bordering sandy woods, Factory Hill, *F. & L.*, nos. 6728 and 6906. See pp. 360 and 363.

*Tagetes minuta L. Southampton County: roadside south of Courtland, *F. L. & S.*, no. 5949; sandy alluvial bottomland of Nottoway River, Courtland, *F. & L.*, no. 6913. Isle of Wight County: sandy waste ground and roadsides, Lee's Mill, *F. & L.*, no. 6912. See pp. 362 and 366.

Artemisia ludoviciana Nutt., var. gnaphalodes (Nutt.) T. & G. Isle of Wight County: spreading about old house-site bordering dry sandy woods, south of Zuni, *F. & L.*, no. 6916.

*Cirsium Nuttallii DC. Southampton County: sandy thickets north of Sycamore Bend, *F. & L.*, no. 6438. See p. 344.

Prenanthes autumnalis Walt. Frequent in dry or moist pinelands, Prince George, Sussex, Isle of Wight and Nansemond Counties. See p. 360.

(*To be continued*)

NOTES FROM THE HERBARIUM OF THE UNIVERSITY OF WISCONSIN—XVI

Norman C. Fassett

Xyris **papillosa**, n. sp., foliis 12 cm. vel minus longis, apice obtusis vel rotundatis basi exterioribus papillosis; scapis 3.5 cm. vel minus longis; capitulis ovoideis; bracteis eroso-denticulatis; sepalis lateralibus mucronulatis carinis apice erosis.—Lake Windigo (or Bass Lake), Hayward, Wisconsin, July 28, 1934, *J. J. Davis* (type in Herb. Univ. of Wis.).

X. papillosa, var. **exserta**, n. var., bracteis inferioribus carinis viridibus; sepalis superioribus apice exsertis, carinis integris vel subintegris.—Woodruff, Wisconsin, August 8, 1936, *J. J. Davis* (type in Herb. Univ. of Wis.).

Immature seeds of the Woodruff plant are about 750 μ long, as compared to a length of 500 μ in *X. caroliniana*, and they appear as if the longitudinal markings would at maturity be of a coarser type than those of *X. caroliniana*, somewhat suggesting those of *X. torta*. *X. caroliniana*, perhaps the closest relative of *X. papillosa*, is found as far northwest as the dunes region at the head of Lake Michigan.

Woodruff is almost 320 miles northwest of that region, while Hayward is about 410 miles from the dunes and some 90 miles west of Woodruff.

X. papillosa was collected by Dr. Davis on the last of his many trips to Hayward, and the material of var. *exserta* was found in his office, among the few collections left unstudied by him at the time of his death in February, 1937. Unfortunately, his data did not include the name of the lake, of which there are very many about Woodruff.

The members of the genus *Xyris* in the Great Lakes region may be distinguished as follows:

a. Upper scales with a terminal tuft of castaneous multicellular hairs; lateral sepals ciliate; plant bulbous.....*X. torta.*
a. Scales entire or erose; lateral sepals erose, denticulate or entire; plant not bulbous....*b.*
b. Plants with slender rootstocks, forming a turf; heads narrowly ellipsoid; scales brown throughout; (lateral sepals with tips exserted; lowest scale winged).....*X. montana.*
b. Plants without rootstocks; head broadly ellipsoid; scales with a central green area....*c.*
c. Scales entire except for tearing with age; lateral sepals not mucronulate; leaves smooth, tapering to acute or acuminate usually straight tips.....*X. caroliniana.*
c. Scales denticulate; lateral sepals mucronulate; lower leaves papillate especially toward the base, abruptly narrowed to obtuse or rounded tips which are usually turned to one side....*d.*
d. Sepals erose on the wing above, the tips not exserted; lowest scale thickened but rarely winged.....*X. papillosa.*
d. Sepals nearly or quite entire, the tips often exserted; lowest scale with a green wing.....*X. papillosa* var. *exserta.*

Stellaria **muscorum**, n. sp., caulis laxis, 4.5 dm. vel minus longis, bifurcatis, pedunculis axillaribus; foliis spathulatis 2–4 cm. longis; pedunculis 4–5.5 cm. longis; sepalis 3-costatis, 3 mm. longis, marginibus scariosis; petalis 5–7 mm. longis, oblongis, apice dentatis; antheris globosis, 0.3 mm. diametro; seminibus 1 mm. diametro, laevibus lucentibusque.—Stems lax, reaching 4.5 dm. in length, dichotomously branching, with a peduncle between each pair of branches; leaves spatulate, 2–4 cm. long; peduncles becoming 4–5.5 cm. long; sepals 3-ribbed, 3 mm. long, scarious-margined; petals 5–7 mm. long, oblong, toothed at the apex; anthers spherical, 0.3 mm. in diameter; seeds 1 mm. in diameter, smooth and shining.—Wet springy limestone cliff, Dripping Springs, Delaware Co., Oklahoma, April 19, 1936, *N. C. Fassett & V. M. Watts*, no. 18030 (type in Herb. Univ. of Wis.).

S. muscorum, appearing as an Ozarkan homologue of the Alleghenian *S. fontinalis*, resembles that species in its dichotomous branching, spatulate leaves, and 3-ribbed sepals, but differs in the

possession of petals, its larger anthers (those of *S. fontinalis* being only about 0.1 mm. in diameter, and in its larger, smooth seeds (those of *S. fontinalis* being 0.5 mm. in diameter and pebbled).

The habitat of *S. fontinalis* is described as "on the cliffs of the Kentucky River and Elkhorn Creek; forming mats in wet places where the water of springs flows over."[1] *S. muscorum* is at the head of a deep ravine, among mosses which are constantly dripping with water from crevices in the rock and from the fine spray of a waterfall.

To Mr. C. A. Weatherby, who first recognized the affinities of this species, the writer is deeply grateful.

ANEMONELLA THALICTROIDES (L.) Spach, f. **chlorantha**, n. f., sepalis viridibus, basi albis.—Damp limestone cliff, Brighton, MISSOURI, April 24, 1937, *N. C. Fassett*, no. 18606 (TYPE in Herb. Univ. of Wis.).

In this form the ordinarily white or pink sepals are green and of leaf-like texture except for a small white area at the base.

MADISON, WISCONSIN.

DID SYMPHORICARPOS ALBUS COME ORIGINALLY FROM CANADA?—The common snowberry, long known as *Symphoricarpos racemosus*, was described by Linnaeus as *Vaccinium album*[2] in Species Plantarum i. 350 (1753), and originated from Kalm's collection, the habitat being given as "Pensylvania." But if we take into consideration one of Kalm's letters[3] written to Linnaeus in 1751, the actual place of origin may well be Canada and not Pennsylvania. This letter, written from Åbo in Finland, contains descriptive notes on six species of *Vaccinium* found in North America, the last one being as follows:

"6. *Vaccinium baccis albis insipidis.* So har jag kallat en liten buske som jag fan växande på höga mullbacker vid sidan af Laurence flod i Canada d. 22 Aug. 1749." [So I have called a little bush which I found growing on the high hills beside the St. Lawrence River in Canada on the 22nd of August, 1749.] Kalm goes on to say that though the appearance was in general that of a *Vaccinium*, he felt quite uncertain about the genus, since only mature fruit was available, which resembled that of *Cornus herbacea* [*C. suecica*] in taste, but which was so insipid as to be inedible.

[1] Short & Peter, Transylv. Journ. Med. vii. 600 (1836).
[2] See Blake, RHODORA xvi. 117 (1914).
[3] J. M. Hulth, Bref och Skrifvelser af och till Carl von Linné i³. 80 (1922). Uppsala.

From his notes in diary form we know that Kalm arrived at Quebec on August 5, 1749,[1] and that he collected extensively in the surrounding country, but unfortunately no entries were made for August 22. However, from the cited correspondence it seems fairly clear that the snowberry came originally from Canada.—H. K. Svenson, Brooklyn Botanic Garden.

TWO NEW SPECIES OF ARCTOSTAPHYLOS FROM THE ROCKY MOUNTAINS

Reed C. Rollins

New roads in many portions of the west have recently opened to botanical exploration areas previously unvisited. Such a road, facilitating travel in a little known region, brought to attention the two new species of *Arctostaphylos* described below.

The Uncompahgre Plateau, from which the two species were obtained, is unique as a somewhat isolated structural uplift. The plateau reaches an elevation of more than ten thousand feet, the upper reaches of which support a luxuriant vegetational cover. Proceeding to lower levels, one is amazed at the rapid transformation to an arid-transitional flora. On the north and western slopes of the plateau, among and adjacent to the Ponderosa Pines, *Arctostaphylos pinetorum* and *A. coloradensis* are to be found in abundance. Both species are gregarious, the former often forming extensive thickets on the "breakish" points of the plateau.

Arctostaphylos **pinetorum**, sp. nov. Shrub 1–2 m. high, forming dense beds 10 meters to 0.8 kilometer (half-a-mile) in diameter; stems erect or somewhat spreading, 3–10 cm. in diameter toward base, intricately and widely branched above; exfoliating bark of stems and branches dark brownish-red; branchlets and petioles glandular-puberulent; leaves erect or divergent, green, ovate, obtuse at both ends or rarely acutish at apex, entirely glabrous or often minutely glandular near base; blade 2–4 cm. long, 1.5–2.5 cm. wide; inflorescence loosely paniculate, flowers few; bracts and rachis minutely glandular-puberulent; bracts subulate to broadly lanceolate, acute; pedicels glabrous, 2–6 mm. long; corolla white to rose, 5–8 mm. long; sepals orbicular and rounded at apex, scarious-margined; mature berry creamy white to yellowish-brown, round to depressed-globose, shining and glabrous, flesh farinaceous; nutlets 3–5, usually coalescent, smooth, light brown in color.

[1] Travels into North America, ed. Forster 445 (1772).

Frutex 1–2 m. alta; caulibus erectis, divaricato-ramosis; ramis vetustioribus rubidis, glabris; ramis junioribus et petiolis glanduloso-puberulentibus; foliis erectis vel divaricatis, viridibus, glabris, ovatis; laminis 2–4 cm. longis, 1.5–2.5 cm. latis; inflorescentiis paniculatis; bracteis rachique glanduloso-puberulentibus; bracteis subulatis vel lanceolatis; pedicellis 2–6 mm. longis, glabris; corolla alba vel roseo-alba, 5–8 mm. longa; sepalis orbiculatis; drupis maturis, subalbis, glabris, depresso-globosis vel rotundis.—COLORADO: 3 miles west of Cold Spring Ranger Station, Uncompahgre Plateau, T 50 N, R 16 W, Mesa Co., Sept. 1, 1936, *Rollins 1586* (TYPE in Gray Herb.); Buckeye Basin, Montrose Co., July 20, 1912, *Walker 324* (G[1]); rocky hillsides, Paradox, Montrose Co., Nov. 20, 1912, *Walker 567* (G), *Utah:* among Lodgepole Pines, Stillwater Fork, Uinta Mts., Summit Co., July 15, 1926, *Payson 4975* (G); in lodgepole forest, Uinta Mts., Aug. 13, 1931, *Greenman 4645* (G).

Although similar in many respects and probably most closely related to the Sierran *Arctostaphylos patula* Greene, this species differs in having conspicuously glandular-puberulent branchlets, a loose paniculate inflorescence of few flowers, rather uniformly ovate leaves which are nearly always erect or erect-spreading, creamy to yellowish-brown, mealy berries and a strikingly gregarious habit. These features together with a wide geographic separation, serve effectively to distinguish *A. pinetorum.*

A puzzling phenomenon concerning the berries of *Arctostaphylos pinetorum,* is the apparent dehiscence which occurs while they are still attached. The flesh curls back along indefinite lines leaving the bony nutlets exposed. That this feature is not an anomaly cannot be definitely stated; however, the fact that it was repeatedly scrutinized and generally observed in the field would lend support to such an assertion.

ARCTOSTAPHYLOS **coloradensis**, sp. nov. Shrub 3–6 dm. high forming dense beds 3–10 meters in diameter; stems spreading or decumbent, 1–2 cm. in diameter toward base, intricately and irregularly branched; exfoliating bark dark red, glabrous; branchlets and petioles glandular-puberulent; leaves erect, divergent or often pendulous, obovate, not cuspidate-mucronate, glabrous or minutely glandular toward base; blades 2–3 cm. long, 1–1.5 cm. wide; petioles 4–7 mm. long; inflorescence congested-paniculate; bracts and rachis glandular-puberulent; bracts lanceolate-attenuate, the lower foliaceous, oblong and acute; pedicels glabrous, 2–4 mm. long; sepals orbicular, scarious-margined; berry globose, bright red when mature; nutlets roughened, single-ribbed dorsally, more or less coalescent; flowers unknown.

[1] Gray Herbarium.

Frutex 3–6 dm. alta; caulibus ramosis, divaricatis vel decumbentibus; ramis vetustioribus rubidis, glabris; ramis junioribus et petiolis glanduloso-puberulentibus; foliis divaricatis vel erectis, viridibus, glabris, obovatis vel spathulatis, apice non cuspidatis, non mucronatis; laminis 2–3 cm. longis, 1–1.5 cm. latis; petiolis 4–7 mm. longis; paniculis congestis; bracteis inferioribus foliaceis, oblongis, apice acutis, superioribus lanceolatis, glanduloso-puberulis; sepalis orbiculatis; drupis globosis, glabris; pedicellis glabris, 2–4 mm. longis; floribus ignotis.—COLORADO: 3 miles west of Cold Spring Ranger Station, Uncompahgre Plateau, Mesa Co., Sept. 1, 1936, *Rollins 1587* (TYPE in Gray Herb.).

Arctostaphylos coloradensis is most closely related to *A. nevadensis* Gray, of the high mountains of middle California and northward, with which it agrees in pubescence and leaf-shape. The proposed species differs from *A. nevadensis* chiefly in having uniformly larger leaves which are rounded at the apex and neither cuspidate nor mucronate and in its more robust, upright habit, often reaching a height of two feet. The plants are, in general, gregarious, forming round beds rather than a continuous carpet of forest floor cover. The procumbent branches often root and send up new shoots, thus spreading the plants in a circular manner.* The wide disparity in geographic distribution of these related species virtually completes the separation.

The range of *Arctostaphylos pinetorum* and *A. coloradensis* as indicated by the specimens cited, seems to center in the north-central portion of the Colorado Plateau Province. These species then, may be considered integrants of the Rocky Mountain flora.

GRAY HERBARIUM,
HARVARD UNIVERSITY.

[1] During the past summer, a reexamination of these two species for evidence of root-enlargement and crown-sprouting was made. Four plants of *A. pinetorum* and two of *A. coloradensis* were excavated, but none of the plants showed an appreciable root-enlargement of any sort. Crown-sprouting apparently does not take place, nor is such an adaptation required for survival, since forest fires have not been known to occur in the area, at least for the last hundred years.

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